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MAINTENANCE OF ASPHALT PAVEMENTS*

Discussion of Defects Due to Wear and Tear of Traffic, Deterioration of Bituminous Material and Defects in Construction.—Repairing by Cutting Out and by Surface Heating

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The proper maintenance of an asphalt pavement involves the making of such repairs to it from time to time as are necessary in order that it may continue to render efficient service as a safe and smooth roadway or street.

The deterioration which eventually renders these repairs necessary commences as soon as the pavement is laid, and may be broadly classified under the following heads:

1. Defects due to the wear and tear of traffic.
2. Defects caused by the deterioration, through age and exposure, of the bituminous cementing material used.
3. Defects in construction.

TRAFFIC DETERIORATION.

Under traffic the surface of the pavement is abraded and gradually wears off and the mineral particles exposed on the top are more or less crushed and broken. Where these particles are large this crushing action is plainly noticeable, but with the smaller particles of sand it is hard to detect it. Under heavy traffic and unfavorable weather conditions these crushed grains become active centers of disintegration. The crushed particles are not bound together by the asphalt cement and are soon swept away. The holes thus made in the pavement serve to retain the moisture and the edges of the holes are eventually more or less broken down, thus enlarging the hole. This condition reproduced all over the surface tends to make it wear away much more rapidly than would otherwise be the case. The effect of this action, which at first glance appears trivial, has been so well established by years of investigation and experience that it has become axiomatic in the paving industry that the heavier the traffic the finer must be the particles composing the mineral aggregate. In hot weather, when the pavement is plastic, the abrasion of the surface is much less than in cold weather, when the pavement is hard and possesses practically no plasticity. In hot weather the caulks on horses' shoes sometimes mark up the pavement to a very considerable extent, but the subsequent action of vehicular traffic wears these marks out almost completely. Nevertheless, in a community unaccustomed to sheet asphalt pavements the appearance of these caulk marks in a new pavement is always regarded as an ominous sign presaging its speedy destruction and failure. As a matter of fact, if the pavement, especially when newly laid, were not soft enough to show these marks it would be an almost infallible sign that the asphalt cement used in it was too hard and that the total life of the pavement would be less than if a softer asphalt cement had been used. Traffic on a pavement always compresses it and increases its density, and for this reason a two-year-old pavement will always mark up less than a new one. The pressure per square inch exerted by the comparatively narrow tire of a heavily loaded vehicle is much greater than that exerted by the heaviest steam roller used in the laying of sheet asphalt pavements. Even if this were not the case, the kneading action produced by narrow tires passing many times over the surface would always give greater compression than could be obtained by the action of the broad tires of a steam roller.

When the traffic is confined to a comparatively narrow space and is always in the same direction a distinct pushing force is exerted on the pavement. Whenever the pavement lacks inherent stability, due to an improper mineral aggregate or bitumen which is lacking in cementing value from natural causes or the rotting action of gas or water, or a combination of these defect, very distinct waves or bumps will be produced by the action of heavy traffic. These waves sometime occur in recently laid pavements in which the asphalt cement used was of the highest quality, but in such cases will usually be confined to a few places. Investigation will almost always show defective binder in these spots, or too soft an asphalt cement, or too great a thickness of pavement, owing to an error in the grade of the concrete. A paving mixture designed to have proper stability when laid 2 inches thick will often fail in this respect when laid 4 inches thick, which is the explanation in the case last cited. Too soft an asphalt cement will also reduce the stability of a pavement. Once these waves appear, they are aggravated by traffic passing over them. The wheel of each vehicle rises to the crest of the wave and then drops down with considerable force into the adjacent depression. The plastic pavement in this way is continually displaced at the low spots and shoved up at the high spots until in many instances the concrete will be exposed at the bottom of the depression. Similar depressions are produced by setting manholes too high above the surrounding pavement. Vehicles drop off these high manhole covers onto the pavement and soon pound it out of place. It is better to set all manholes slightly below the grade established for the finished pavement.

Waves are much less liable to appear in those portions of the pavement which are subjected to cross traffic; i. e., in which the traffic does not always move in the

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same direction. This is usually the case at street intersections, and if properly constructed, the pavement in these locations almost always lasts longer than in any other part of the street. It has been seriously suggested that in order to increase the effective life of pavements the direction of the traffic in the afternoon should be the reverse of that in the morning, but the resulting confusion would probably more than offset the gain from such a procedure.

Car tracks in a street paved with sheet asphalt may cause the pavement to deteriorate very rapidly. Unless the rails are very heavy and laid on an adequate foundation they will vibrate excessively when cars pass over them. This is especially the case where tracks designed for light city or town cars are subsequently called upon to carry heavier cars or cars of the interurban type. Not only will the vibration be excessive, but the rails will frequently sink below the level of the pavement and leave depressions where the water will collect. To prevent the vibration from being communicated directly to the sheet asphalt rows of paving blocks or bricks are frequently placed along the rails, although in many cases the sheet asphalt is brought up directly to the rails. When the vibration is excessive the sheet asphalt pavement crumbles or cracks in a very short time and leaves an opening for surface water to enter between the wearing surface and the concrete foundation, thus permitting the rotting action which is described under the second heading to take place.

EFFECT OF AGEING AND EXPOSURE.

All bituminous materials used in paving work deteriorate upon exposure to the elements and to the rotting action of escaping gas, water and street liquids. The lighter oils contained in them gradually volatilize, thus hardening the remaining bitumen. As the hardening process goes on the pavement loses its plasticity and wears away with increased rapidity. Eventually the bitumen loses its elasticity and the pavement cracks. The edges of these cracks crumble away and the cracks become sufficiently wide to be plainly felt by vehicles passing over them. The bumping action previously described in connection with waviness is produced and adds to the rapidity with which crumbling takes place. In order to guard against this and prolong the effective life of the pavement the asphalt cement used in its construction is made as soft as possible without rendering the pavement too mushy when new. The extent to which this can be carried depends upon the grading and character of the sand employed. With a well graded, sharp sand and plenty of filler a much softer asphalt cement can be used than with a poorly graded or rounded sand. This is due to the greater inherent stability of the former type of sand. It is obvious that a mineral aggregate which when dry strongly resists displacement will permit the use of a comparatively soft asphalt cement. Modern traffic conditions have in this particular respect come to the aid of the pavement makers. Automobiles in their passage over the pavement are continually dropping a certain amount of oil on its surface, which is very evenly distributed by the large number of vehicles passing over it. This oil is gradually absorbed by the pavement and thus softens the bitumen and counteracts to a large extent the hardening action of time upon it. This is very clearly shown in a certain pavement in Chicago, which, prior to the passage of any considerable number of automobiles over it, some five years ago was so hard and badly cracked as to have practically reached its limit of usefulness. The street in question subsequently developed into an automobile center, with the result that the pavement was softened up by the dropping of oil upon it to such an extent that it is still giving satisfactory service. Fifth Avenue, New York City, is a somewhat similar case.

Some asphalts are more easily rotted by water action than are others. With such asphalts it is even more necessary to make the pavement as dense as possible to prevent the water from getting into it. Generally speaking, with all asphalts the wetter the climatic or other conditions the denser and richer in bitumen should the mixture be made.

The action of water upon a pavement may take place from the surface downward or from the bottom upward. The latter action is the more serious and the harder to guard against. The top surface is always compressed to its maximum density by the action of traffic, and if it has sufficient crown and grade to let the water run off and is kept clean so that it will not be covered by a layer of wet mud for long periods but little deterioration will take place. Where water is allowed to remain in the gutters the rotting will frequently be very rapid, and this will be still more marked if, as in some towns, the dirty wash water from houses is discharged into the gutters. Too frequent washing of a pavement with water at a high pressure is also bad, as the abrasive action of such a jet is very considerable and acts in the same way as the stream from a hydraulic nozzle. In a number of cases water finds its way between the wearing surface of the pavement and the concrete foundation. This may be due to the geological formation of the subsoil strata (and it must be remembered that concrete is not water proof, especially the type used for foundation work), or the water works its way down between car tracks and the abutting pavement, or through faulty gutter construction, etc. Under such conditions it has little or no chance to evaporate or drain off and attacks the pavement at its weakest point; i. e., where the compression is the least. It gradually destroys the life of the bitumen and renders it incapable of cementing the grains of sand together. This action progresses upward through the pavement and in some cases is not apparent until only a top shell of good pavement remains. Depending upon the conditions, this action usually manifests itself by a shoving and waviness of the pavement at the point where the rotting has taken place. Owing to the loss of the cementing power of the bitumen, the stability of the pavement has been lowered so that it can no longer withstand the shoving action of traffic previously described. If the pavement is cut through at this point the white sand grains will be plainly apparent and the whole mass can be readily disintegrated between the fingers. As soon as the rotting action reaches the surface the pavement is quickly worn away by traffic and a hole is produced.

Gas leaks produce a very similar result, and the gas sometimes travels a long distance from the point of leakage before it actually comes in contact with the pavement.

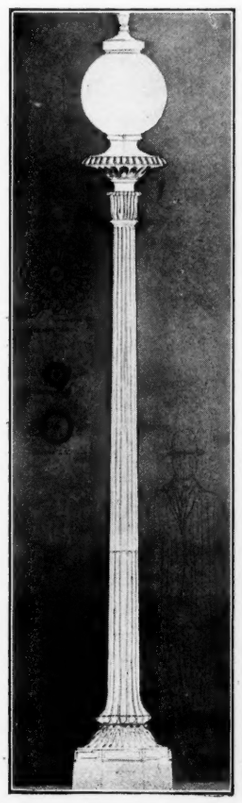
Another cause for the deterioration of sheet asphalt pavement is lack of traffic. Pavements laid on outlying residence streets and culs-de-sacs with little or no traffic crack much more quickly than if they were subjected to a moderate traffic, which appears to be necessary to keep the life in the pavement. This is probably due to the fact that the surface is not in such cases kept at the maximum density by the action of traffic and gradually becomes porous, thus facilitating the evaporation of the lighter oils, and also to the fact that the kneading action of traffic, like the continual use of a rubber band, tends to keep the life, so to speak, in the bitumen and equalizes the stresses set up by the contraction and expansion due to changes in temperature.

(To be continued.)

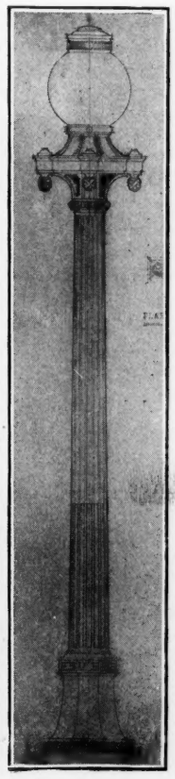
GAS LAMP STANDARDS FOR ST. LOUIS.

In April of this year a new design was adopted for gas lamp standards to be used on the principal streets in St. Louis, this design having been selected from 35 which were submitted in response to an invitation of the Civic League. The Municipal Art Committee of the League conducted the contest under an arrangement with the Board of Public Improvements. The League offered a prize of $50 for the best design, with the further understanding that the committee would select two other designs and these three would be submitted to the Board of Public Improvements, which would adopt one of them; and that the designer of the one adopted would receive the sum of $25 for making working detail drawings of his design. The jury which passed upon the designs consisted of three citizens, one of whom was an architect and another was the curator of the City Art Museum. The three designs selected by them are shown in the accompanying illustrations, the design by Hugo A. Graf, a draughtsman in the architect's office of the Board of Education, and shown in figure No. 1, being given first prize. Mr. Graf's design was later chosen by the Board of Public Improvements for installation, and 200 standards of this design will be placed on the principal streets of the city.

In inviting the designs the Civic League stated that the standards should hold one Welsbach gas lamp; should be 12 feet from the sidewalk level to the centre of the globe; the diameter of the base should not exceed 21 inches, and a smaller size would be preferable; provisions should be made for a number of openings around the bottom of the globe to provide for the intake of cold air and for insertion of the lamp lighter's torch; there would be required above the globe a ventilator through which the hot products of combustion may escape and which will prevent the entrance of wind and rain; and that the globe surrounding the lamp must be of standard size, between 13 inches and 18 inches diameter. As the standards are to be of cast iron, one of the conditions was that the design should be suitable for casting in iron at a reasonable cost. It was required that the design submitted be made on a scale of 3 inches to 1 foot, drawn on any kind of paper or modelled in clay, wax or plaster.



NO. 1.



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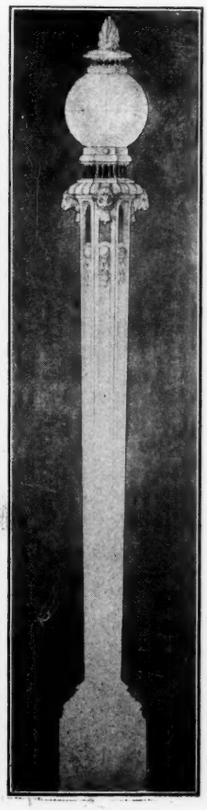


NO. 3.

This contest was conducted for the purpose of developing a better standard of art in public places. The Municipal Art Committee plans other contests for ornamental public structures, following an arrangement made about a year ago, when the Municipal Art League was absorbed by the Civic League. The Art League had a fund of $520, which it turned over to the Civic League to be used for this purpose, and the entire fund will be employed in conducting tests similar to this one.

COST OF DESIGNING AND INSPECTION.

The latest annual report of the Division of Special Studies, Investigations and Designs of the Bureau of Construction of Pittsburgh, Pa., gives the cost of the work done by that Division in the preparation of contract plans and designs and the studies required therefor, the estimates and specifications, for each of a number of pieces of work. These costs do not include the engineers or inspectors on the actual construction. Work of this kind done in connection with raising the street grades of the West End district cost 0.88 per cent of the contract cost, which was $131,816. Similar work in connection with a grading, paving and curbing job costing $109,404, amounted to 1.31 per cent of the contract cost; and to 2.12 per cent of the contract cost of a similar work, the contract price for which was $30,170. In preparing sewerage plans, the cost of preparing general plans, studies, designs, contract plans and specifications, amounted in one case to 2.46 per cent of the work done, which amounted to $138,000, and in another case to 1.48 per cent of work done which amounted to about $159,000. In each of these two cases, however, the work of the Division included preparing a general plan for the entire drainage basin, and making designs for work not yet contracted for, which plans would consequently be available for future contract work.

Considering the total payroll of the Division of Design for the year, and the contract or estimated costs of the execution of the work designed, the former amounted to 0.88 per cent of the latter.

The cost of inspection on the various kinds of work done under the charge of the Bureau of Construction, in terms of the total days' labor of men and of teams employed during the year by the contractors, was as follows:

	Teams	Men	Cost of Inspection
Grading, Paving and Curbing	15,380	105,167	$20,172.29
Sewers	452	31,667	8,243.37
Bridges	134	9,269	2,266.40
Miscellaneous	119	1,926	941.48
Totals	16,085	148,029	$31,623.54
General Work			2,492 68
			$34,116 22

The published records not only give the totals shown here, but give the totals for each of the larger jobs for each month; and an examination of these shows that the cost of inspection is to a considerable extent independent of the cost of the work. For instance, on one of the bridges the inspection cost $100 a month during seven months of the year, while the day's of labor employed varied from 331 in April to 2,366 in November. It is apparent that the relative cost of both engineering and inspection must necessarily be much higher on small jobs than on large jobs of long continuance.

TESTING SEWER PIPE.

In his report for the year 1910, the city engineer of Spokane, Washington, Morton Macartney, describes the method of testing sewer pipe employed in that city as follows:

"In order to establish a scientific basis for determining definitely the crushing strength of the sewer pipe which is being used in this city, and in order that we might get as nearly as possible at a judgment of the true merits of the different pipe, we planned and had constructed a machine for testing samples of pipe which we might select from the piles delivered on the work. The accompanying sketch shows in outline the character of the machine we have used for that purpose. The vitrified clay pipe is usually condemned for the lack of two qualities, one is its great absorption and the other the lack of sufficient strength to sustain the load of earth imposed upon it after being laid in the ditch. The matter of absorption is a test easily made in the laboratory, but until the time the machine shown herewith was made, we had no means of determining definitely what the comparative strength of different samples was.

"Among the tables submitted for your information is a short report showing in a small measure the work accomplished in the line of testing sewer pipe, both vitrified and concrete. There has come into this market in the last year machine-made concrete pipe, and before the use of this was permitted, exhaustive tests and a thorough investigation of its uses in other cities have been made."

In testing a sewer pipe, it is imbedded in a sand cushion on a substantial platform. A very light layer of cement or plaster of Paris just wet to plasticity is coated over the upper outside surface of the pipe and a knife edge placed in position upon it. This knife edge is in the form of a T beam and the pressure is applied to it through a cast-iron ball, which in turn receives the pressure from a beam which is hinged at one end and carries weights upon a platform suspended from the other. A counterbalance is applied at the latter end to offset the weight of the beam and weight platform.

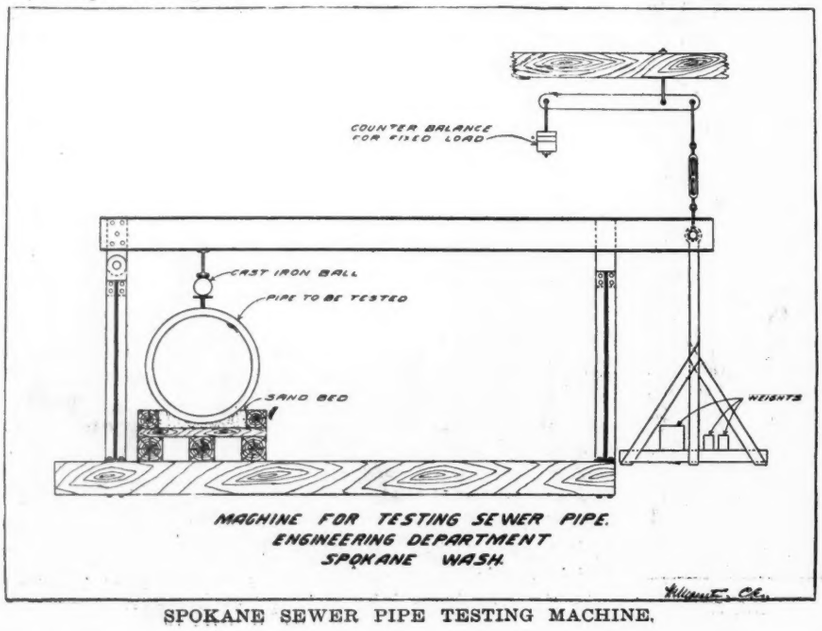
This testing machine was first used in September, 1911, and by the end of 1912 118 pipes had been tested by it. The results of the tests made in 1912 are shown in the table in the first column.

Results of All Sewer Pipe Tested in 1912.

Dia., In.	Len'th, In.	No. Samp's Tested	Load—Lbs. per Lin. Ft.—Specifications Require	Min.	Max.	Av'age	Per Cent. Absorption, Average
8	24	16	1,000	830	2,400	1,549	6.35
8	30	21	1,000	665	1,585	974	7.03
10	24	3	1,100	1,060	1,650	1,265	5.90
12	24	2	1,150	1,225	1,255	1,240	5.80
†15	24	1	1,300	1,157	1,157	1,157	2.30
24	24	1	2,000	2,537	2,537	2,537	5.70
30	24	6	2,300*	1,850	3,425	2,369	6.25

*Specifications do not state a required test, but in the same ratio of increase it becomes as given.

† Sample condemned.



SPOKANE SEWER PIPE TESTING MACHINE.

TRIPLE MOTOR APPARATUS.

Opinions of Several Fire Chiefs For and Against.—Not Desired for Large Cities.—Cost of Operation in Newcastle

At the latest convention of the International Association of Fire Engineers, the subject of triple combination hose wagon, chemical and pumping engine was discussed by several of the chiefs, the discussion being opened by a paper by Chief F. J. C nnery, of New Castle, Pa. Chief Connery calls attention to the fact that although this is spoken of as a triple combination, in reality it carries ladders of sufficient length to reach ordinary buildings, scaling ladders, axes and other light equipment and is therefore practically a complete fire department in one apparatus, and must therefore be of particular interest to small cities which must economize in the number of pieces of equipment. The principal point of the discussion was as to the success of this equipment and the desirability of its purchase by cities; and it was conceded at the outset that for larger cities which had a great many pieces of apparatus, smaller combinations than the triple would probably give better service, especially in the matter of speed. The principal objection which chief Connery saw to the triple combination was its great weight, which ranged from 5 to almost 10 tons. On account of the weight of the machine, pneumatic tires appeared to be out of the question, and block solid tires seemed to give the best results, being more satisfactory than the smooth solid tire, especially in mud. On the other hand, the solid tire causes an objectionable jarring of the machine when taken over a rough street, the vibration tending to loosen all the parts of the machine, which makes an increasing amount of care and attention necessary to keep it in proper shape.

The advantages were stated by Chief Connery as follows: "If it is a small fire, you have the chemical, and in quantities almost as great as that carried by the chemical, or chemical and hose alone; and the chemical, in my experience, is used successfully in three-fourths of all fires and is all that is required. If the water hose is necessary, you would have it in as great quantities as are carried by the hose wagon alone; and you have the additional advantage of a set of pumps always ready to use with hydrant, cistern or river and with as much power as the steamer, and superior to the steamer in maintaining a steady flow of water through a long, continuous period of service. You have with you, in case their use is necessary, an amount of

ladders equal to that carried on any combination wagon, and the time consumed in reaching a fire over that consumed by a smaller wagon is so small that the great equipment more than counterbalances that loss."

The writer stated that his city purchased a Knox triple wagon which went into service in October, 1911, although having been used in instruction and practice from August 27 of that year. During the ten months prior to the time this paper was written, this machine had answered 123 alarms, traveled 886 miles, used 739 gallons of gasoline, all at an average expense for repairs, gasoline, oil and other incidentals of $5.50 to $8 per month. The wagon weighs 7½ tons when loaded and carrying eight men, is propelled by a 70-horsepower gasoline motor and is equipped with a 40-gallon chemical tank with 150 feet of chemical hose, 1,000 feet of 2½-inch cotton jacket hose, piston pump, a 24-foot extension ladder, a 14-foot scaling ladder, two 3-gallon fire extinguishers and a full complement of small tools. This machine makes 30 to 35 miles an hour on the level, or from 10 to 15 miles on the steep hills without difficulty. The pump has never failed to go into action and continue in action whenever called upon, and although guaranteed to throw 600 gallons of water per minute, has maintained a continuous rate of 850 gallons a minute in several tests, while 750 to 850 gallons are pumped without any strain on the machine.

In discussing this, Chief Kenlon of New York stated as his opinion that the triple wagon was a mistake, although the combination hose and chemical gave excellent service. He did not think that all kinds of apparatus should be combined in one machine, but that "you should be able to divide your forces. You cannot possibly put out a fire with just one piece of apparatus that you have anchored at a hydrant, or at a river, or at a well, or at a cistern. When it is anchored there you cannot use it in any other way." Chief Delfs, of Lansing, Mich., was even more emphatic saying, "I want to say to you right here and now that the triple combination is not a success and never will be. It cannot be. I never can or will believe in the triple combination. I do not believe that half the chiefs here do. I believe the manufacturers should be discouraged from manufacturing that kind of apparatus." Chief Kennedy of Billings, Mont., stated that their city had a triple combination machine which had been in use for about two years, and that he did not like the combination, saying, "If you have to pump, the chemical is no good to you and vice versa. . . . The hose and chemical is all right. If you take a piece of motor fire apparatus, a pumping engine for instance, and load it down with a chemical wagon and 1,500 or 2,000 feet of hose and ladders and all other equipment, it becomes so heavy that you cannot run it in the small towns without pavements and on muddy streets." Chief Rose of Wheeling, W. Va., said that he did not have any combinations in his department and did not believe in them, contending that they were too clumsy for getting around in alleys or narrow streets. Of those who opposed the triple combination, Chief Kennedy was the only one who had ever used them. On the other hand, all the other chiefs who spoke on the subject and who had used the triple combination were in favor of it. Chief Springer of Texarkana, Texas, had obtained good service from a triple combination for two years and believed such a wagon was particularly valuable in the smaller cities for use in the outskirts where it is inconvenient and expensive to pull a steamer. "When you get there with your triple combination, as you can do so much more quickly, probably, you have everything there ready for action. You have your chemical; you have your pump, if necessary, and you are ready to lay a line of hose from the hydrant." Chief Ferber of Scranton, Pa., also was decidedly in favor of this apparatus, as was Chief Cummings of Atlanta, Ga.; the latter stating that he used one in the residence section to relieve the engine there. "My idea," said he, "is always to take the first lead from the hydrant and the second lead, when necessary to have it, from the engine. When the captain sees, as he approaches, that the fire is burning rapidly, he stops at the hydrant and lays out the hose just as he would with a hose wagon. Then if necessary he runs out a second line of hose from the pump to the hydrant." Ex-chief Hale of Kansas City, Mo., said: "We have a triple combination motor driven apparatus in our city, and find it to be a grand success. We do double duty with it. We have had some pretty big fires and have required the engine to work four or five hours on a stretch right along. After the experience we have had, we think more than ever of the triple combination." Chief Stagg of Sapulpa, Okla., had used a combination for two years and on 33 occasions for extinguishing fires and was convinced of its desirability.

JERSEY CITY MUNICIPAL EXHIBIT.

During the week of April 28th to May 3d, there was held in the Fourth Regiment Armory in Jersey City a municipal exhibit which was examined by a large percentage of the citizens and by a number from out of town. The exhibit was open daily from 1 p. m. to 11 p. m., although children under sixteen were not admitted after 5:30. The color scheme of the decorations was blue and gold, streamers, flags and bunting being used generously. During each evening the attraction of a band was added, and one or more lectures were given in a large space left for this purpose at one corner of the building of sufficient capacity to hold nearly 700 persons. Moving pictures and lantern slides were used in connection with these lectures.

Each city department had its own section, and different methods were employed by the different departments in giving information concerning its activities. In the 900 square feet allotted to the police department was shown a scene at headquarters, the appliances used in taking Bertillon measurements and in photographing for the Rogues' Gallery, police signal boxes and precinct equipment, such as monitor board, time stamp, etc. Among the exhibits was an electric horn which it is proposed to install on the street patrol boxes and which can be operated by wire from headquarters. In the fire department was shown a sample of the fire alarm system, automobile combination chemical and hose, and chemical and pump. In the street and water exhibit were maps showing the location of the water sheds and diagrams showing how the water is brought to the city and how it is purified, etc. Water meters were shown with their parts removed, so that their operation may be easily understood. The street lighting department prepared a

JERSEY CITY MUNICIPAL EXHIBIT.

map of the city on a large scale on which was indicated by means of tiny lamps the location of every street lamp in the city. The sidewalk inspection department showed by photographs how sidewalks looked before and after householders were induced to repair them. Samples were shown of the new street signs, which the City Planning Commission hopes to have installed at every street corner; ash cans placed through the hall showed the model which the Commission hopes to have placed in the city streets; a model was shown of the Peter Stuyvesant statue which is shortly to be erected in the city, and another of a garbage destructor such as the city may soon possess. In this way the citizens were shown, not only the existing features and activities of the several departments, but several of those which are being advocated by the Commission and the several departments.

On April 15th Jersey City adopted the elective commission form of government, which will assume control of the city on June 17th, and one of the lectures which was delivered on several occasions during the week described this form of government in its various details as it will affect the several departments.

TESTING MOTOR ENGINES.

The convention of the International Association of Fire Engineers is to be held in New York City, September 1st to 4th. In preparation for this, a meeting of President Magee, Secretary McFall and other officers of the Association, George W. Booth, chief engineer of the National Board of Fire Underwriters and Secretary Mallalieu of the same board, and representatives of practically all manufacturers of motor pumping fire engines, attended a meeting in New York on April 30th to discuss the subject of the exhibition of fire apparatus and the testing of the same, in order that the entertainment committee might be advised of the needs of the manufacturers. Concerning the matter of testing, J. R. Clarke, president of the American-La France Fire Engine Company, said he considered a six-hour test sufficiently long, as did A. C. Webb, president of the Webb Company. Each of these gentlemen had no fear that their engines would not show up well on a twelve or even a twenty-four-hour test, but considered that six hours was sufficiently long to demonstrate the efficiency and other characteristics of a pumping engine, and that it was unnecessarily tiresome and expensive to continue a test for a longer period. Chief Kenlon of New York stated that, as New York City would furnish the gasolene for the test, the twelve-hour test would not cost the manufacturer any more than would a shorter one. All of the tests would be made simultaneously, a 600-foot dock being provided for this purpose, if necessary, and the test of all the engines would require only twelve hours. He stated that he had had steamers run 36 to 48 hours continuously without a hitch in actual service. B. K. Black of the Seagrave Company, had no fault to find with the specifications, but thought that a shut-off test should be added to the requirements. C. J. Cross, of the Robinson Fire Apparatus Company, was in favor of the twelve-hour test, believing that a great deal could be proved in such a test that could not be proven in a shorter one. He also suggested running one or two steamers in competition with the motor engines. The matter of size of suction and rating of engines was also discussed. In connection with the report that the local convention committee contemplated charging exhibitors $1.50 per square foot for space, practically all of the manufacturers present stated that they were opposed to the idea of paying anything for space, and would not send any exhibit at all if any such charge as $1.50 were made.

CONVICT LABOR IN NEW JERSEY.

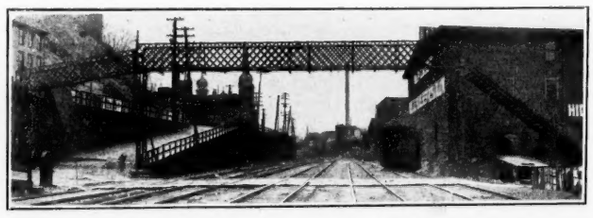
The New Jersey State Legislature has this year passed amendments to the road law, among which are provisions making practical the use of convict labor. On this subject state road commissioner Edwin A. Stevens recently commented as follows:

"The convict labor law made no adequate provision releasing the keeper of the state prison from responsibility for the custody of prisoners laboring on roads. Neither did it make provision for the pay of guards or others assigned to watching prisoners. It was necessary that these defects should be remedied before convict labor could be used to any great extent upon the roads.

The use of convict labor on road construction appears to be increasing throughout the country, and an inspection of the synopses of the state laws given in our issue of May 1 indicates that a considerable percentage of the states now employ convict labor to a greater or less extent in this work, while there are several other states in which the use of convicts is provided for by law. Another important change in the New Jersey law was one which directed the immediate taking over of 500 miles of state highways, which will necessitate the organization of a very considerable state road force. The state will be divided into three divisions, each in charge of a division engineer, and it is the present intention to organize for each division a convict labor party which will be kept continuously at work on repair work within its division. On May 19 bids will be received by the commissioner for an extensive equipment of road appliances, convict camps, etc., for prosecuting this work.

STEEL BRIDGE PROTECTED WITH CEMENT.

The Department of Public Works in Pittsburgh has recently made use of an ingenious method to save from deterioration a footbridge on Pine street that passes over the railroad tracks. This steel frame was becoming affected by the gases from the engines that passed beneath it. In order to save the bridge from ruin the board enclosed it in concrete, which was so attractively and effectively set in place that the bridge is now stronger and far more artistic than ever, and at the same time is protected from any further attacks by the deleterious fumes. The entire structure, including the stairways, the supports, the floor and railing, were covered with a layer of cement, and the viaduct is now a reinforced concrete structure, although such a thing was not contemplated at the time of its erection. The idea is so practical that it may be worth following elsewhere in the case of metal structures of various kinds that are subjected to disintegrating gases.



PINE STREET BRIDGE, PITTSBURGH, BEFORE AND AFTER ENCLOSING IN CONCRETE.

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CHANGE OF ADDRESS
Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributions suitable for this paper either in the form of special articles or of letters discussing municipal matters, are invited and paid for.
Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

MAY 15, 1913.

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Auto Trucks and Pavements.

The idea frequently expressed that no sooner has an armor plate been invented which will resist any projectile than a projectile is brought forward which will pierce the armor plate, seems to have its parallel in the automobile and modern road building. Four or five years ago, it was found that water-bound macadam was being rapidly destroyed by automobile traffic, and scores of copyrighted names and patents for roads to resist this traffic appeared from all quarters. But now that smooth and fairly durable roads have been provided by the thousands of miles, automobile builders are not only turning out pleasure cars by the thousand, but are greatly increasing the number and weight of trucks used for business purposes. The destructive feature of the pleasure automobile was the thrust of the driving wheel which pulled out the road metal, and the suction which removed the fine binding material; and both of these destructive tendencies were met by providing a more adhesive and durable binder. With the heavy truck, however, comes an entirely different method of destruction—unprecedented weight, which tends to crush the road material or break and disturb the foundation. Six inches of fairly good concrete was apparently sufficient to carry a 2-ton touring car, bridging over any small depressions or soft spots or trench settlements; but it is becoming apparent that such a foundation is not strong enough to prevent an 8 or 10-ton truck from breaking down such a foundation where it is not sufficiently supported by the subgrade.

A few weeks ago we published an abstract from reports of municipal engineers in London showing that in several of the boroughs of that city pavement foundations were being increased to 12 inches to meet the increasing use of heavy trucks, and engineers in several of the larger American cities have, during the past six months, reported that recent experiences in this country seem to demand a similar increase in foundation strength. In three or four states, legislation has been introduced calling for a high tax on heavy motor trucks, the proposed laws in some cases placing an absolute limit upon the weight allowed per inch width of tire. Some legislators have even considered placing an absolute limit upon the weight of truck which will be permittted on the roads under their jurisdiction.

The truck manufacturers plead, and with some reason, that the use of trucks will play a large part in decreasing the high cost of living. As it is now, it costs more to get produce from the farm to the railroad, and more again to bring it from the railroad to the consumer, than the railroad charges to carry it half-way across the continent. Next to eliminating the middleman, the reduction of these local transportation charges seems to offer the most promising field for reducing living costs.

As a matter of fact, we doubt whether it will be possible to enforce legislation which would restrict the weight of loads carried on our streets and highways. It would therefore seem necessary for road engineers to quickly develop the most economical plan for increasing the strength of the roads which are to carry these heavy trucks. And first, it is worth considering whether it would not be desirable to limit these heavy loads to certain roads and streets, and thus relieve the communities of the cost of making *every* road capable of withstanding the heaviest loads.

Another suggestion: One of the causes of deterioration of all kinds of pavement is the fact that, in contracting in cold weather, they open up into narrow cracks, which cracks become filled with dirt and do not close again with the expansion resulting from higher temperature. It is suggested that reinforcing bars placed in the foundations of pavements would prevent this, since with the contraction due to cold, these bars also would contract and prevent the concrete foundation from opening into cracks, the co-efficient of expansion of concrete and steel being nearly the same. Instead of adding six inches to a concrete foundation to provide strength for the heavier loads referred to, reinforcement properly placed in the concrete would serve the same purpose. A fine mesh reinforcement in city pavements would form an obstruction to excavating for house connections, etc., but by placing these bars 15 or 18 inches apart in one direction, by 24 to 30 inches in the other, it would be possible to excavate trenches without cutting the reinforcement, and then with ordinary care in replacing, the concrete foundation should be practically as strong as before.

Brick Tests for Abrasion.

Editor Municipal Journal,
New York.

Dear Sir: Your correspondent, in sending you the tests required by a number of cities as to the abrasion loss allowed by them, as published in your issue of April 24th, page 579, is misleading. The impression your correspondent seems to want to create is that the American Society of Municipal Improvements fixed the standard of 22 per cent as the maximum. The A. S. of M. I., at their session held in Grand Rapids, Mich., Sept. 26th to 29th, 1911,

adopted as the abrasion test on the new Standard rattler 22 per cent for heavy traffic; 26 per cent for medium traffic, and 28 per cent for light traffic. (*At the 1912 convention this was changed to "25 per cent or even 28 per cent."—Ed.*)

The Organization of City Officials for Standardizing Paving Specifications, at their session in New Orleans, La., Jan. 9th-12th, 1912, adopted 22 per cent for heavy traffic, 25 per cent for medium traffic and 28 per cent for light traffic.

These facts are matters of record and can be verified by inquiry of the respective societies, of whom the writer obtained this information. I believe the percentages given in the list of cities to be correct, but an analysis of the results obtained will give some information not generally published.

Baltimore, with her 20 and 21 per cent test, is practically a closed market; Chicago, Indianapolis and Columbus, with their 21 per cent, are closed markets, and not to exceed one-half dozen manufacturers of paving brick ship into these markets, and these cities are putting a barrier on good, honest, fair competition without obtaining any better results in quality in return, but in most instances at a higher price to these cities. Akron, Fremont, Fostoria and Bryan, each with 22 per cent, occasionally make a few tests. Some of these cities are receiving 26 and 28 per cent brick at this writing under their 22 per cent specifications.

The state of Ohio permits 22, 25 and 28 per cent. material under its specifications. The state of New York allows 24 per cent; Detroit, Mich., 24 per cent; Cuyahoga County and Cleveland, 20 per cent on the old rattler, with an allowance of 4 per cent for the new rattler, and little attention is given to these abrasion tests in Cleveland and Cuyahoga County. The officials who have had to deal with the road building rely on their personal judgment and good common horse sense in the selection of paving brick of quality, rather than depending on any mechanical device to furnish their brains with this information.

The writer is not finding fault with the manufacturer of paving brick who deems it necessary to advocate a low maximum test, but I know that a general uniform adoption of a low maximum test is an expensive consideration for the municipality and the taxpayer, and besides not getting for them a material of superior quality to any other that may stand an abrasion test of 18 per cent to 26 per cent, with 24 per cent as the maximum. The writer trusts you will find this of sufficient interest to give it space in your journal.

Very truly,

CHAS. J. DECKMAN.

CHICAGO MUNICIPAL REFERENCE LIBRARY.

On April first the Chicago Public Library, at the solicitation of the Chicago City Council, as expressed in an ordinance to that effect, took over the control of the Municipal Reference Library in the city hall, which will be operated hereafter as a branch of the Public Library. The Municipal Reference Library is similar in purpose to the libraries of this character established in the cities of Baltimore, Kansas City, Milwaukee, Minneapolis and St. Louis. It is engaged in collecting, indexing and preserving all data obtainable relative to the operation and government of municipalities, such as reports, ordinances, statistics, books, bills, documents and magazines. This material, while chiefly intended for municipal officials, is also available to any citizen, civic organization, representatve of the press, and all who desire information on any function or phase of city government. It is located in room 1005, City Hall.

MARKET HOUSE FOR CHATTANOOGA.

Chattanooga, Tenn., expects to establish a market in what is known as the South Side, an institution which it is said a large majority of the public demand. The proposed plan is for an enclosed market house and additional stalls on a so-called plaza, which would be roofed over. The building will contain sixteen stalls, each 12x16 feet, which can be divided into two 12x8 stalls where desired. These will be placed on each side of a 12-foot centre aisle. In this building also will be placed men's and women's toilet rooms.

On the outside plaza the stalls will be in three rows, each containing eight 12x16-foot stalls, one row facing the sidewalk, just inside of which would be another row facing a 16-foot aisle, on the other side of which aisle would be the third row, which would extend to the rear property line. The building would have a concrete floor with a smooth cement finish, and a roof of wooden rafters and composition roofing supported by 6-inch hollow cast iron columns, which would also serve as rain water leaders. The outer walls are to be double, of planks. A skylight will be placed in the roof to furnish additional lighting.

CLASSIFYING ROAD EXPENDITURES.

Method of Accounting Adopted by the Maryland State Roads Commission.—Desirability of Better Method of Recording Road Costs

In our issue of last week we published a letter from W. W. Crosby, in which reference was made to a part of his report as chief engineer of the Maryland State Roads Commission. From this report we abstract the portion of the discussion on cost records which is of general application, including therewith in tabulated form a classification of expenditures which was recommended by Mr. Crosby and by the accountants, and which, it is stated in the report, "will constitute the method of accounting which the Commission will follow in the future." This is accompanied in the report by explanations defining more exactly what is covered by each of the heads and subheads. As the explanations are quite lengthy, we refer those who are interested in the subject to the report itself should they desire to study the matter more thoroughly. The definitions of preliminary, construction, re-construction and maintenance work, however, it seems worth while to quote:

Preliminary. This covers the work of the engineering department in making surveys, plans, calculations, investigations, estimates, specifications, etc., up to the advertising of the work for bids.

Construction. This is the work of the Commission or of its forces in the improvement according to the preliminary plans, specifications, etc., of a structure (or the building of a structure de novo) on or a section of a state road in the state road system.

Reconstruction. This covers the rehabilitation, serious repair, rebuilding or replacement of old structures on the turnpike, or state aid roads, taken over by this Commission for maintenance by it.

Maintenance. This covers the work of preventing the deterioration of, repaving, upkeeping, of treating with oil, pitch, etc., and generally of keeping in satisfactory condition, the roads (and structures on them) under the charge of the Commission.

(*Extract from the Report of W. W. Crosby to the Maryland State Roads Commission*).

Comparison is frequently made between the costs of Maryland work and the cost of similar work elsewhere. This comparison is a difficult one to make fairly, and the obstacles in the way of a fair comparison seem, only too frequently, to be almost insurmountable. Many authors of statements in this regard have seemed either to prefer to state unfair conclusions or to have been unable to overcome, to the extent necessary for perfect fairness to both sides, the obstacle in their way. For instance, the successful construction of "sand-clay" roads in North Carolina at a reported average cost per mile of, say $1,000, has, in the minds of some, utterly condemned

your work costing five or ten times this amount. And the satisfactory construction, with pit-gravel, of roads in New Jersey and around Savannah, Georgia, at a reported average first cost of $2,500 per mile has produced the same effect in the minds of many others. But a fair comparison might present, to many of the same parties, a different aspect were all the conditions prevailing in each case more fully known and stated. Again it will probably be quite generally admitted that it would be unfair to condemn the road work of the states of New York and Pennsylvania simply because the statistical reports of those states show the average first cost of their work to run as high as ten to twelve thousand dollars per mile.

The facts are (a) that reported "first costs" even when carefully and accurately made are not satisfactory bases for comparison of the value of the results secured.

(b) That even when so made, they are at present seldom, if ever, compiled along the same lines.

(c) That local conditions of soil, climate, topography, etc., enter so largely into the problem that unless a great deal is known about each and every one of these points, it is practically impossible for even the experienced student of such matters to make a fair comparison of costs and results.

(d) That anything like a fair comparison can only be made after careful study of all the elements of the problems, and then only after the further thorough consideration of traffic conditions and the expenditures for maintenance over a period of not less than five years.

It may be admitted, therefore, that the point made by the writer, regarding the general incorrectness of drawing comparisons from reported "first costs" is well taken. However, there is properly a great deal of interest in what are the "first costs" in any case and accurate "first costs" are absolutely necessary to a further study of the subject.

But most of the reported "first costs" of road work by individual states are useless for comparison, except possibly in the headquarters of each state respectively, because of the absolute lack of general uniformity in their compilation. Up to the present time, while a great deal has been published concerning the recording of cost data both on the work in the field and in the office files or books, little if anything appears to have been agreed upon or even stated, after careful study, concerning the compilation of these data into such statement of facts that a fair comparison may follow. Even in a single locality, costs are found to be compiled generally in as many ways as there exist methods of performing the work.

For instance, in some statements of costs, the salaries of the inspectors on the work are charged to "Construction costs," in others to "Engineering."

Some highway authorities report the cost of "Supervision" as from 2 to 5 per cent. of the cost of construction, but the certainty that in many such cases these highway authorities are not exceptionally efficient in either their work or their management of it renders it beyond question that this low figure for supervision is due to an unusual method of arriving at the segregation of expense recorded. Some highway authorities receive funds for engineering and construction and separate funds for administration and headquarters' expense. Frequently the reports of these boards show no consideration of the latter fund in their reports of costs—a manifestly unfair and confusing statement of the facts of the case.

Again, in the matter of construction itself, a confusing variety of systems exists. If work is done by a contract, the unit cost on each item is the unit price of the "lowest responsible bidder" therefor, and it may be assumed, for the purposes of this discussion that the bid is, as it should be, a "balanced" one. This price must include consideration of depreciation of plant required for the work of the item, "overhead charges" for administration and profit to the contractor. Now, only too often have engineers deceived, not only others but also themselves apparently, by drawing comparisons between such "prices" and "costs of contemporaneous force account" work done under similar conditions of locality and supervision when the recorded "costs" are found to contain no such allowances as above mentioned.

There are many cases where costs have been compiled on different bases and reported in the cases of similar work done "under force account." On one, the machinery may have been owned by the department and on the other, rented. In the former case, no depreciation nor rental has been charged into the costs; on the other, the actual hire paid is included. Further, there occurs frequent variation between the percentages of depreciation when allowed.

With a view not only of establishing a uniform system of compiling the records of expense in your work, but also with the hope of suggesting a system which will appeal strongly for general adoption and when so adopted will enable comparisons of costs to be made with confidence, your accountants and your chief engineer have carefully studied the problem and devised the following system according to which the expenditures of your Commission may be most satisfactorily classified:

Cost

- Administration and Legal
  - Commission's (or Board's) Salaries and Expenses.
  - Commission's (or Board's) Office Force, Salaries.
  - Commission's (or Board's) Office Expenses.
  - Commission's (or Board's) Counsel, Salaries, Fees and Expenses.
- Engineering, General
  - Chief Engineer's Salary and Expenses.
  - Chief Engineer's Office Employees' Salaries.
  - Chief Engineer's Office Expenses.
  - Chief Engineer's Instruments and Repairs.
  - Chief Engineer's Laboratory Investigations.
- Preliminary
  - Engineers in Charge—Salary and Expenses.
  - Survey Parties—Salary and Expenses.
  - Office Employees' (Draftsmen, etc.) Salaries.
  - Office Expenses, Stakes, etc.
- Construction, (Reconstruction) (Maintenance).
  - Engineers in Charge—Salaries and Expenses.
  - Office Employees—Salaries.
  - Office Expenses.
  - Inspectors—Salaries and Expenses.
  - Superintendents—Salaries and Expenses.
  - Foremen, Labor, Teams, Etc., Pay of Advertising.
  - Materials Consumed, Expense For.
  - Use of Equipment, Rental For and Repairs.
  - Rights of Way and Damages.
  - Advertising.
  - Miscellaneous.
- Equipment
  - Expense For.
  - Transportation of and Establishment.
  - Renewals and Depreciation.
  - Salaries of Men in Charge of, Etc.

News of the Municipalities

Current Subjects of General Interest Under Consideration by City Governments and Department Heads

ROADS AND PAVEMENTS

To Experiment With New Paving Brick.

St. Petersburg, Fla.—Plans are under way for testing out a paving brick that the St. Petersburg Ornamental Stone and Brick Company, which is now erecting an immense kiln with 40,000 capacity, are to manufacture by paving one of the blocks with it. If the brick stands the test St. Petersburg will be able to construct many miles more of paving, as the company can manufacture the brick much cheaper and the big item of transportation will also be eliminated. The company has recently been organized, primarily for making brick for building purposes, but the city paving in St. Petersburg and a number of the cities adjacent to it offers such a field that the promoters are now equipping the plant to make paving brick also. The city is to test the first batch that is made. The brick which the company is to make is by a new process in which sand is used and burned to make a harder and more durable article than the Georgia product now being used.

Best Earth Road in the Country.

Demopolis, Ala.—Demopolis has the best system of natural dirt roads in the United States. Such is the expression of approbation of the splendid work of Overseer John Wilson by a party of distinguished visitors who recently visited Demopolis. The party, consisting of John Craft of Mobile, Prof. George N. Mitcham of Auburn, V. B. Atkins of Selma and State Engineer W. S. Keller was entertained by N. G. Winn, who carried the party in his car over the splendid country roads. A reception and lunch was served at the inn. All visitors to Demopolis commented on the fine condition of the roads radiating from the town. The merchants of the town raised a substantial fund to employ an overseer, who, with the best road machinery, keeps every road graded and drained. They say that the money has been well invested.

Road Built by Public Subscription.

Petersburg, Va.—Under the direction of F. D. Henley, an engineer conected with the State Highway Commission, Contractor Rudolph Beck, of Prince George County, will begin the building of the new road over the old Jerusalem Plank road from the city limits, a distance of five miles, to Youngblood's store, in Prince George. The money for the new road was raised by public subscription in Prince George and Petersburg, and by an appropriation by the Board of Supervisors of the county, to which was added money from the state road aid fund. The road will cost in excess of $5,000. The road will be widened, plowed, and laid with gravel to a depth of several inches, making of it one of the best highways in this section.

Repair State Roads for Future Traffic.

Harrisburg, Pa.—Repair work on state main highways has been started in every county in the state by the road superintendents of the State Highway Department and will be pushed in the vicinity of county towns and on the roads passing through agricultural sections, so that by the first of June, one year from the time of taking over the 8,000 miles of main highway routes the entire system will be in the hands of repairmen. This work was started during the early part of April, as rapidly as the men in charge could organize their forces and within a few months the methods which the state will use in maintaining its comprehensive system of roads will be demonstrated. Under the act of 1911 providing for a system of roads the repair work is to be handled out of funds placed at the disposal of the department by the legislation enacted. Under present conditions it appears that both the state aid and general road building must be cared for by the Legislature now in session, the bond issue to provide for work from 1915 on. Pending legislation is also calculated to provide for the construction of township roads and their maintenance, so they will help to develop with the main highway system. The $50,000,000 bond issue is now regarded as the best method to obtain satisfactory results in construction. Demands upon the state for charities and for various public works are of such a character as to require a large part of the revenue. Furthermore, to secure systematic development it is recognized that a regular plan of yearly appropriations must be made, and it is the idea to enact such legislation at the next session of the Legislature as will distribute the proceeds of the bond issue and lead to harmonious extension of good roads.

State Convicts to Build Road.

Newton, N. J.—Sussex County is to have the first road taken over into the new state system of "blue" roads, so designated on the surveys of the State Road Department. The road is from Stanhope to Newton, a distance of eleven miles, all but about one mile of which is already improved with macadam to a width of fourteen feet, and the work will be done by convicts from the state prison at Trenton, who will be quartered for weeks at a time in two camps to be provided by the county. The "blue" roads, so-called, are those to be built first by the state to connect up other improved thoroughfares, and thus make a comprehensive system of through highways that will link the principal centers of population. Decision to make the Stanhope-Newton road the first in this system was reached by an agreement entered into between State Road Commissioner Stevens and the Board of Freeholders of Sussex County. This highway is to be made sixteen feet wide, and before work is commenced the freeholders must acquire title to the land necessary for the widening. The county is also required to provide land for two convict camps, where the workmen are to be housed, and it must furnish a quarry at which the State Department is to set up stone-crushing equipment. This is the first time for state convicts to be put to work building roads so far from base at Trenton as to necessitate the establishment of large convict camps. Last winter a small gang of convicts was put to work in Mercer County on the White Horse road that runs from Trenton to Allentown, but they were conveyed back and forth by stage, and each night they were locked as usual in their cells.

Seven Districts Named for Good Roads Work.

Madison, Wis.—The Wisconsin Highway Commission divided the state into seven districts and appointed a division engineer, draftsman and corps of surveyors for each division to render more efficient help to town and county authorities in the construction of good roads. The total amount of money to be spent on highway work in the state this season, aside from bridge work, will be $2,600,000. The headquarters of the first district will be Madison, with S. F. M. Balsley, engineer in charge; second, Milwaukee, engineer not yet assigned; third, Green Bay, William Conway, engineer; fourth, Grand Rapids, James Gillespie, engineer; fifth, La Crosse, W. C. Buetow, engineer; sixth, Eau Claire, S. M. Hall, engineer; seventh, Ashland, F. M. Sargeant,

engineer. The first district will consist of Dane, Marquette, Columbia, Sauk, Iowa, Lafayette, Green, Rock, and Jefferson counties; second, Milwaukee, Racine, Kenosha, Walworth, Waukesha, Ozaukee, Washington, Dodge, Green Lake, Fond du Lac and Sheboygan; third, Brown, Door, Kewaunee, Manitowoc, Calumet, Winnebago, Oconto, Outagamie, Shawano, Langlade, Marinette and Florence; fourth, Lincoln, Marathon, Wood, Portage, Waupaca, Juneau, Adams and Waushara; fourth, La Crosse, Buffalo, Trempealeau, Monroe, Vernon, Crawford, Grant and Richmond; sixth, Eau Claire, Polk, Barron, Chippewa, Taylor, Clark, Jackson, Dunn, St. Croix, Pierce and Pepin; seventh, Ashland, Bayfield, Douglas, Barnett, Washburn, Sawyer, Iron, Vilas, Oneida, Forest, Price and Rusk.

Pave Thirty-three Miles in Ten Years.

Madison, Wis.—Since 1900 there has been spent the sum of $1,189,522 for permanent street improvements in the city which was expended on just 33.04 miles of roadway, as shown in the report of the City Engineer. The total amount of work not finished last year amounts to $135,-998.33. The City Engineer reports that $5,283.31 was expended for oiling the streets, and that twelve and one-tenths miles of macadam streets, having a yardage of 192,-000, were oiled at a cost of 2.75 cents per square yard. The oil used, however, was not up to standard of oil used the previous year, and did not give as good satisfaction. In spite of heavy traffic, some of the streets oiled in 1911 are still said to be in excellent condition and will not require another application this year. It will be necessary to oil a majority of the streets again with a better grade of oil in order to insure good satisfaction, however, according to the report. Of the total of 33.04 miles of street work permanently finished since 1900 23.94 miles were constructed of plain macadam, .67 of a mile of brick tar macadam, .05 of a mile tar filled macadam, 3.64 miles sheet asphalt, 3.1 miles creosoted wood block, .58 of a mile and Kettle river sandstone, .06 of a mile.

Three Billions for Highways.

Washington, D. C.—An expenditure of three billion dollars for good roads—one billion being for construction and two billion for maintenance, the investment extending over a period of 50 years, was proposed in a plan submitted to the joint congressional committee on Federal aid in the construction of post roads, by former Senator Bourne of Oregon. Senator Bourne's plan provides for Federal and state co-operation. He also suggests the establishment of a national school of highway and bridge engineering, from which trained specialists in road building would be supplied to the various states. The billion dollar construction fund, according to Mr. Bourne's plans, would be apportioned among the states upon the basis of area, population, assessed valuation and road mileage. The states would be required to deposit in the United States Treasury 54 per cent. bonds for the amount due them. The government would then loan the states the par value thereof for road construction, the Government raising its fund by the sale of 50-year non-taxable 3 per cent. bonds. By crediting each state every year with the excess 1 per cent. interest paid on the state bonds and allowing 3 per cent. interest on the amount compounded annually a sinking fund would be established it is estimated, from which the Government would pay off the bonds at the end of 50 years and the state would be relieved of the payment of principal on its bonds.

Highway Extension to Yellowstone Park.

Milwaukee, Wis.—Wisconsin, together with Wyoming, Minnesota and South Dakota, are interested in a highway extending from Chicago to the Yellowstone National Park and to be known as the Chicago, Black Hills and Yellowstone Park Highway, with a shorter pseudonym, "The Black and Yellow Trail." The route, as outlined by the committee, starts from Chicago directly north along the lake shore to Milwaukee, thence westward through Madison to La Crosse, thence north to Winona, thence through Minnesota and South Dakota following closely the line of the Chicago & Northwestern railroad, crossing the Missouri river at Pierre, and west to and through the Black Hills and on to Yellowstone Park. The promoters of this highway intend to exploit it as one of the divisions of an ocean to ocean highway, having terminals on the Atlantic and Pacific coasts.

Important Street Work Started.

Chisholm, Minn.—Commissioner Harrington has started the most extensive work ever undertaken by the village in the way of improving the streets and boulevarding the city as well as planting trees. A man experienced in tree planting will superintend the planting of the trees. Many streets must be raised or lowered to grade in places and the engineer has the work outlined and will keep the Street Commissioner and his crew busy. The work will be started on Oak street to the extreme south side of the town, and the work will be carried north as fast as conditions will warrant. Nearly every street and avenue in town will receive some attention and wherever possible the streets will be left in a finished condition as regards the curbs and tree planting. Two thousand trees have been ordered and additional stock can be purchased on short notice according to the terms of the contract. The trees are mostly elms and Carolina and Norway poplars.

SEWERAGE AND SANITATION

Urge Installation of Sanitary Fountains.

Savannah, Ga.—Savannah is trying very hard to get the city authorities to install sanitary drinking fountains in the public squares. The public benefit committee of the Chamber of Commerce adopted a suggestion from a special subcommittee that this should be done and will present a report to the Mayor to that effect.

To Install Septic Tank.

Central Falls, R. I.—Within the next few weeks it is expected that the installation of the new septic tank, connected with the Imhoff system of sewage disposal, will be installed at the present filter beds on the West Side. The first definite move in that direction was taken at the meeting of the Common Council when a resolution was introduced to appropriate the sum of $28,000 for the purpose of installing the tank and the necessary equipment for operating the system. The committee appointed by the City Council several months ago to investigate the conditions and report upon what was considered the improvements needed at the present filter beds, looked into the matter carefully, and decided to engage the services of a Providence engineer, by whom they have been guided in the undertaking so far.

City's Sewage Problem Deferred.

New Brunswick, N. J.—Further action by the State Board of Health upon the matter of the construction by the city of a sewage disposal plan has been postponed until June 17. The State Board recently visited New Brunswick and made an inspection of the Raritan river, which, it was alleged, was polluted by city sewage. It was found the oyster beds in Raritan Bay were not affected and conditions were not as bad as was thought. At the June hearing the matter of sewerage for the borough of Milltown will also be taken up.

WATER SUPPLY

Meters to Stop Waste of Water.

San Francisco, Calif.—City Engineer O'Shaughnessy, who has been making a study of the water situation, says that the city is even worse off than is generally supposed on account of the limited Spring Valley supply. As the Spring Valley Company refuses to increase its San Francisco supply by development work, the City Engineer says that the water available must be made to go as far as possible, and as a means to this end he proposes to recommend to the Board of Supervisors that meters be installed throughout the city. The general use of meters has been suggested to the Spring Valley Company hereto-

fore, but the company, while admitting that millions of gallons per day could be saved by this process, has been unwilling to go to the expense of putting in meters, as the outlay on this score for the entire city would probably amount to $700,000 or more. City Engineer O'Shaughnessy's idea is that the company should be persuaded to install a general meter system on the assurance by the city officials that, in the event of the purchase of the Spring Valley properties by the city the full amount expended for meters will be repaid. He deems it of pressing importance to have the saving of water effected as soon as possible. O'Shaughnessy has been studying the subterranean sources of water supply which can be utilized temporarily to meet pressing needs in districts that are without Spring Valley water, and he is to report soon, advising where and how wells can be sunk and the water distributed.

Cumberland's New Water System Completed.

Cumberland, Md.—The dam at Evitts creek in connection with Cumberland's new water system has been completed and it is stated the water from the new source of supply would be running into the city mains not later than July 4, when it is proposed to hold a jubilee in honor of the completion of the new system. The Potomac river as a souroce of supply will then be abandoned.

City May Purchase Water Plant.

Brockport, N. Y.—At the meeting of the Village Board of Trustees it was decided that the village of Brockport offer the Brockport-Holley Water Company the sum of $60,750 for its water system in and about Brockport, the last proposition of the water company to the village, and 10 cents per 1,000 gallons for water furnished to the village of Brockport from June 1 to October 1, 1913, and 13 cents per 1,000 gallons from October 1 to January 1, 1914; such proposition to be submitted to a vote of the taxpayers for their approval. The Brockport-Holley Water Company notified the board that it would accept the offer of $60,750 for its local plant, including meters, franchises, standpipe, and main leading to it in Sweden and the Clarkson extension. A special election will be held, when the proposition will be submitted to the taxpayers.

Aitkin's Water Being Treated.

Aitkin, Minn.—Owing to the number of cases of typhoid fever Aitkin people have become alarmed over the city water supply from Mud river. B. M. Mohler sent the State Board of Health to take samples of the city water for examination in the State Laboratory, and the report showed the water to be highly contaminated. Dr. Mohler and Dr. Burns arrived and have installed an emergency portable hypochlorite plant. The water is now treated as it is pumped from the river before passing into the storage tank.

Discard Steam Boilers.

Troy, Ala.—The city will soon discard the costly steam boilers which have for years run the pumps at the waterworks plant and install electric motors to drive the pumps. The electric current will be supplied from the city light plant, which will probably secure its current very soon from the Pea river power plant, thirty miles away.

In Improving Streets Lays Mains for Coming Need.

Scottsville, Va.—Officers of the Board of Health in their investigations of disease outbreaks in various parts of the state have found a number of splendid instances of town planning, among which the experience of Scottsville is made the subject of a special report to the board. The Albemarle town, it appears, decided recently to improve its streets and to that end made an appropriation for permanent roads. Before the work was begun, however, it was pointed out that within the next few years the town would be called upon to install a modern water supply system, which would require the streets to be torn up for the necessary main. Unable to pay for the good water at this time, the town was unwilling to build good roads only to ruin them with repeated digging. Accordingly it was decided to lay the mains for the water supply system while the streets were being repaired in order that the town might in time install the waterworks without damaging the streets. "This foresight," concludes Dr. R. K. Flanagan, who made the report, "could well be emulated by other towns in the state which have been forced to undo much work on which they spent money in making other improvements."

Will Celebrate Completion of Filtration Plant.

Bridgeton, N. J.—During the first week in June the people of Bridgeton will celebrate the opening of the new $150,000 water and filtration plant. There will be civic demonstrations, together with large industrial displays, in charge of the Commercial League.

Alleges Big Water Waste.

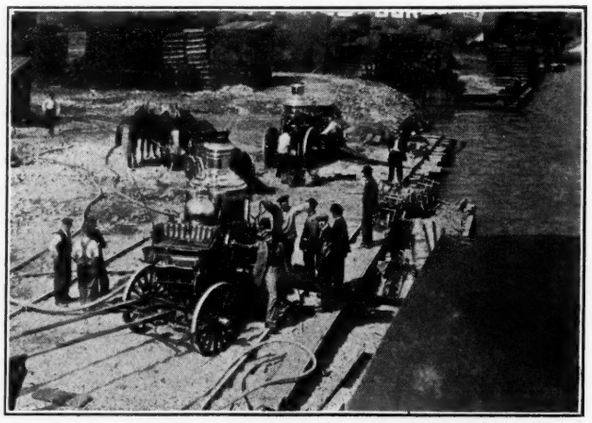
Cumberland, Md.—A pitometer test of the Cumberland water consumption has just been concluded by Water Commissioner Joseph S. Schriver, and he states Cumberland uses three times as much water per capita as Cleveland, Baltimore, Washington or Cincinnati. An average of 6,000,000 gallons of water is being used by the people of Cumberland every twenty-four hours, and, figuring there are 20,000 users, the average is 300 gallons per person each day.

Water Main Bursts; Geyser Results.

White, Plains, N. Y.—An eight-inch water main, which was only recently laid in Orawaupum street, burst one evening last week at a point about one hundred feet from Railroad avenue, and for half an hour a geyser shot into the air for a distance of twenty-five feet and thousands of gallons of water went to waste. The Water Department was notified and finally the flow was stopped when the main was closed on Railroad avenue and on Orawaupum street, opposite the Harlem station.

New Rulings by Water Department.

Salt Lake City, Utah.—All office buildings in the city must install water meters and the Superintendent of Waterworks is empowered to compel installation of meters by any water user when he deems it necessary as a result of an agreement reached by city commissioners on the new water department ordinance to be adopted with the revised ordinances of the city. Installation of these meters must be at the cost of the water user. The provision of the old ordinance that a consumer may be compelled to install a meter if he is found wasting water is not reincorporated in the new measure, but the superintendent is given unlimited authority to compel use of meter if he thinks one should be installed. In addition, a change in the system of assessing meter rates was agreed upon. Under the old system consumers classed as manufacturing concerns were charged only 6 cents per 1,000 gallons, while domestic users were charged 7 cents per 1,000 gallons. Under the new arrangement all heavy users on the meter system will be charged 7 cents per thousand gallons for the first 100,000 gallons used and 6.5 cents per thousand gallons for next 100,000 gallons used and 6 cents per thousand gallons for all over 200,000 gallons used per month. In this way the rate is not fixed on a basis of the use to which the water is placed. This system was worked out by Superintendent C. F. Barrett and he declares it is the most equitable.



Courtesy Toledo "Daily Blade."
PUMPING WATER INTO MAINS DURING BREAKDOWN OF TOLEDO'S WATERWORKS.

Complete System at City Waterworks.

Sioux Falls, S. D.—With the final connection of well No. 2 to the house well, all water pumped by the city waterworks at its station northwest of the city is now handled by the syphon system instead of electric power. Well No. 3 was piped in that manner last year and clearly demonstrated that the method cut down the cost of operation considerably and at the same time provided ample pressure under all conditions. This year it was decided to equip well No. 2 in the same manner and the carload of sixteen-inch pipe received some time ago has been used for that purpose. It is probable that any additions to the system of wells will also be connected with the main house well.

City Water Plant Self-Sustaining.

Milwaukee, Wis.—Milwaukee's water department has refunded to the city treasurer every dollar raised by taxation for the establishment and maintenance of the system and has now a plant which the state railway rate commission has valued at $7,201,379, exclusive of service and meters, according to the annual report of the department issued by Superintendent H. P. Bohmann. Since 1898 the earnings of the department have been enough to pay all operating and maintenance expenses, interest and sinking fund, new construction work and outlays, the remaining surplus being transferred to the general city fund toward liquidating the sums raised by tax levy to support the water works. From 1873 to 1897 the sum of $1,877,538.72 was raised by taxation for the water department. During 1912 there was transferred to the general city fund $200,000, making a total of $1,717,965 earnings of the water works refunded to the city, and during 1913 the sum of $159,573.72 will be added to this amount. The superintendent points out that the $1,000,000 worth of free water that has been furnished the city department more than reimburses the taxpayers for the loss of interest on the money raised to support the institution. The book value on Dec. 31, 1912, was $7,353,206.34 and a bonded debt of $20,000. The appraisement of the state railway rate commission exceeded this valuation by $195,463.84. The value of water service and meters is approximately $3,000,000 and the amount collected for water pipe assessment against abutting property, $1,809,797.38. It would be possible for the city if it disposed of its plants at book value to reimburse to consumers everything paid in the way of water pipe assessments, water service and meters and still have on hand the sum of $2,500,000. Tables are furnished to show that the water rates are low. The rate is 4½ cents per 100 cubic feet or 6 cents per 1,000,000 gallons furnished in the city and 6 cents per 100 cubic feet and 8 cents per 1,000 gallons when furnished outside the city limits. There are 57,657 services controlled by meter and 700 services unmetered. The latter will be metered by May 1, putting every service on a metered basis and compelling each consumer to pay for the actual water used. The average daily consumption of water was 47,556,310 gallons, which is an average of 93,000,000 gallons over that of last year. It is estimated that the average consumption in 1913 will be 49,000,000 gallons daily. By 1917 it is estimated that the average daily consumption will be 59,000,000 gallons. A new pumping station with a total capacity of 120,000,000 gallons daily will be erected. This station will be connected with the new Linwood shaft by a nine-foot tunnel. The total capacity of the water works when all is completed will be 250,000,000 gallons daily and the cost of the project will be $2,500,000. A new sterilization plant is in process of construction to take care of the entire supply of the North Point pumping station when completed. It is recommended by City Engineer Joseph Meiseroff that an investigation be made to determine to what extent the water mains have been damaged by electrolysis.

STREET LIGHTING AND POWER

Mason City Gets Dollar Gas Rate.

Mason City, Ia.—The new City Council passed ordinances lowering the price of gas to $1 and of electricity to 10 cents. Present prices are $1.30 for gas and 17 cents for electricity.

Buys More Diesel Engines.

Menasha, Wis.—The city of Menasha has testified to its satisfaction with Diesel engines and its contempt for the rising price of fuel oil by placing an order for another 225 horse power Diesel with proper electric generator, which will nearly double the capacity of its municipal lighting and power plant.

Hydro-Electric Bill Is Passed.

Albany, N. Y.—Both houses of the Legislature have acted favorably on the Murtaugh-Patrie hydro-electric bill, designed to utilize the surplus waters of the canals for the development of electric power, and Governor Sulzer has indicated he would sign it. While the measure would eventually extend the development throughout the State, it is the intention to establish the initial plants at Vischer Ferry and Crescent dams on the canalized section of the Mohawk river, to provide power for the so-called "capital district." To meet the cost of the plants to be built at these points the bill carries an appropriation of $650,000.

Gas Company Installing White Way.

Chattanooga, Tenn.—Work has been started on the new gas white way being installed by the Chattanooga Gas Company on Market street from Hotel street to Main street and along Main street from Long street to Rossville avenue. This white way is being put in by the merchants and business men along the streets and in many ways resemble the white way now installed on Broad street. Three-lamp posts are being used by the gas company. This makes a light that is as strong as the Broad street gas white way and the globes to be used will be a clear glass. A part of the system has already been completed, but on account of the better results of running the system in series, the gas has not been turned on. Officials of the company said that they would have the entire system complete by the time of the Confederate reunion. This, with the electric white way, will make all of the business streets well lighted. There has been some discussion among merchants on Main street to extend the system further than the present limits, but no contracts have yet been signed.

FIRE AND POLICE

Test High Pressure.

Cincinnati, O.—Several city and fire department officials were present when the high-water pressure service with which Winton place has been equipped was given its first test. The mains extend from the Mitchell avenue aqueduct to Spring Grove avenue in Winton place. The test was made at Spring Grove and Section avenues at the grounds of the Farrin Lumber Mills. With six lines the pressure of 180 pounds on the mains was reduced to seven pounds. At low pressure the stream reached a height of 140 feet. The intention now is to install 500 new plugs.

Salt Lake City Firemen Quit.

Salt Lake City, Utah.—Every active member of the Salt Lake City Fire Department, with the exception of Chief W. H. Bywater, has resigned because of the refusal of the city commission to grant their demands for increased wages.

New Fire Nozzle Drives Off Smoke.

Trenton, N. J.—As the result of many experimental tests of different apparatus made by Chief Bennett of the local Fire Department, a deluge hose nozzle has been found which seems to be especially valuable in fire fighting. The sample nozzle was tried out at headquarters and given a practical test at the Trenton Fuel Company's stable fire. The nozzle is the invention of Deputy Chief Helm, of the New York Fire Department, and is in use in that city. With it a fireman may go into dense smoke and drive it before him. At the stable fire the new nozzle is said to have been largely responsible for extinguishing the flames in a short time. The spray drives away the smoke so that the fire can be seen, then the stream can be applied where it will have effect. The nozzle is manufactured by the S. F. Hayward & Company, New York.

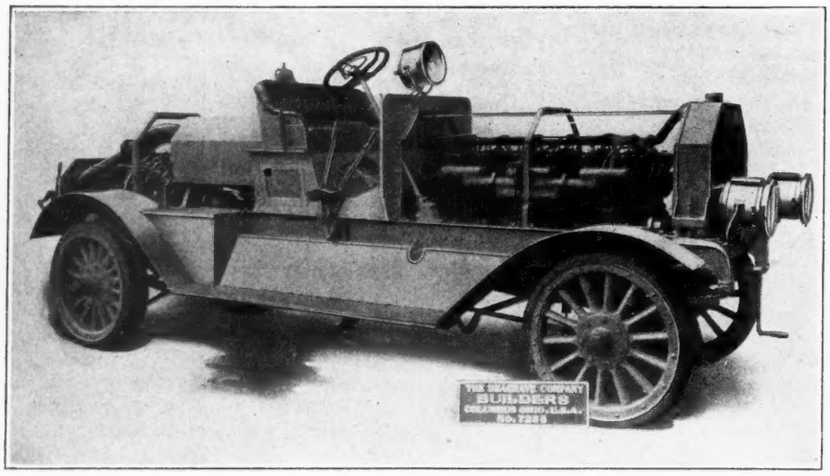
MOTOR VEHICLES

New Fire Auto for Asbury Park.

Asbury Park, N. J.—Neptune Engine and Hose Company is the third in the local department to provide automobile equipment. Wesley company now has an auto apparatus in service, and North Asbury Hose Company has a combination chemical and hose auto building.

Underwriters Test Gorham Auto Turbine Engine.

Tacoma, Wash.—Tacoma's recently acquired six-cylinder auto turbine pumping engine for its fire department is similar to those which have been purchased and put into use by the fire departments of Oakland, Pasadena, San Diego and Los Angeles, California. The city of San Diego specified certain conditions of acceptance and the



GORHAM ENGINE FOR TACOMA'S FIRE DEPARTMENT.

Board of Underwriters of the Pacific coast subjected the engine to several severe tests. The motor fire engine tested was a six-cylinder 144 A. L. A. M. horsepower machine equipped with a multi-stage centrifugal turbine pump, built by the Gorham Engineering Company, Oakland, California. The city specifications called for: First: Suction lift not to exceed ten feet. Second: Eight hundred gallons of water per minute through three 300-foot lines of 2½-inch hose, using one-inch nozzles.

Third: Nozzles to be shut off one at a time and engine must continue to run and not be touched by the engineer even after the nozzles are opened.

Fourth: Continuous run of two hours without stop, during which time the pump must deliver rated capacity. Machinery must be cool and in good working order at the end of the run.

Fifth: 750 gallons of water per minute through three 300-foot lines 2½-inch siamesed into 25 feet of 3½-inch hose, 1⅝-inch smooth bore nozzle to be used.

Extra First Steamer Put in Commission.

Trenton, N. J.—The new American-La France extra first size steam fire engine, with extra equipment, has been received at fire headquarters. It will soon be sent to No. 3 Engine House, on South Broad street, which will then be probably the finest equipped company in the United States. In addition to the new engine, it has the new combination chemical and hose wagon carrying 250 feet of 2½-inch hose. The company is now composed of 12 men, an increase of three, and has three horses. The new apparatus is claimed to be the largest in the United States. It has a guaranteed capacity of 1,200 gallons per minute. The boiler is of the Fox Sectional Water Tube type and has a tensile strength of 60,000 pounds to the square inch. The pumps are double-acting and of the Metropolitan type, with a bore of 5⅞ inches and a stroke of 9 inches. From ground to dome the apparatus stands 10 feet 5 inches high. The extra equipment consists of extra wheels, tires, grates, valves, springs, lanterns and the like. Hard rubber Firestone tires are used on the apparatus.

Fire Chief Clancy Sees Electrical Era.

Milwaukee, Wis.—That Milwaukee will have much more electrically equipped fire apparatus in the near future is the prophecy of Fire Chief Clancy. "Electricity is an essential factor in fire fighting," said the chief. "Without it in a city of any size the department would be almost useless. The great use of electricity in the department today is in its cutting down of expenses. Electric engines are now taking the place of the heavy steam engines whose cost of maintenance is enormous. The engines of the Milwaukee department, which are kept under steam the year around, consume two tons of coal every month while they are lying idle in the buildings. I think that in the near future these engines will be superseded by electric motor driven pumps. These pumps can be transported to the fire much easier and quicker than the heavy engines we now have. They would greatly cut down the expenses of the department."

Auto Fire Truck Equipped With Horn.

Fort Dodge, Ia.—When the new Pope Hartford fire truck recently purchased by the city makes its initial appearance on the streets people will be warned of its trip by long-distance claxon horn besides a regular bell as is now used on the fire wagons. Fire Chief Frank Trusty says that the horn is a necessity on the fire truck. Pedestrians and drivers are accustomed to bells and with this alone on the fire truck there would be danger of accidents. The clatter of the horses' feet and the rattle of the ladders on the horse-drawn trucks attract attention, but with a silent motor there is danger of accidents unless equipped with some peculiar sound-giver which will warn people to look out. The fire truck ordered over a month ago on its arrival in a few days will be installed in the central fire station.

Pump Engine on Test Trip.

Lynn, Mass.—Gasolene pumping engines of the Nott Fire Engine Company of Minneapolis are now on their way on a 1,000-mile road test, to Lynn, Swampscott and Reading, and are expected in the vicinity of Lynn within a week, where they are to give a 30 days' demonstration. This engine is four and six cylinder and the company has issued a challenge to furnish more water per cylinder than any other built.

Additional Auto Apparatus Would Reduce Fire Insurance.

Corpus Christi, Tex.—Members of the Corpus Christi Fire Department who have studied the local fire problem assert that business men can be saved fully $20,000 in insurance premiums by the expenditure of $10,000 or less on the part of the city in purchasing fire apparatus that is required of a city of less than 10,000 population by the rules of the State Fire Insurance Board. Corpus Christi in the last government census showed only 9,000 population and therefore the city comes in the class of those cities which are required by the board to have two combination hose and chemical wagons, one fire engine and one hook and ladder truck. Corpus Christi now has a modern hook and ladder truck and one combination hose and chemical wagon, the latter carrying 1,000 feet of hose. By purchasing a fire engine and another hose and chemical wagon the city will then be in line for sweeping reductions in fire insurance rates. The members of the department favor the plan of the Mayor placing in his next budget a sum sufficient to provide this apparatus and also for the maintenance of the department for the ensuing twelve months. An auto engine could be purchased for approximately $5,000 on long terms and with such a fire fighting apparatus the city would be saved the expense of keeping a team of

horses. Members of the department also favor the purchase of an auto combination hose and chemical engine truck.

Auto Fire Truck is Ordered in Pendleton.

Pendleton, Ore.—Following an order of the City Council, Pendleton will soon have an auto combination chemical and hose wagon for fighting fires. This is the first step toward a more efficient fire fighting system than the present volunteer department. An electric alarm system will also be installed. For the further betterment of the city streets a flushing tank for street sweeping has been ordered.

Praise Efficiency of New Auto Apparatus.

Weehawken, N. J.—In the fire which occurred in the West Shore railroad yards, destroying the Weehawken freight house, freight cars, bridges, etc., property amounting to about $175,000, the railroad officials were high in their praise of the work of the firemen and called attention to the fact that the Clifton department with their new $9,000 automobile engine was on the way at least five minutes before the general alarm was turned in.

Detroit's Park Department Motor Busses.

Detroit, Mich.—Detroit's municipal motor busses are still running, and losing money at the rate of about $45 a day. For the twenty days the cost of operation was $2,445.93, and the receipts $1,541.10, a deficit of $904.83. In spite of his, M. P. Hurlbert, Park Commissioner, recently advocated the purchase of thirty-five more busses, built specially for the service. Only $250,000 would be necessary to buy the machines and fit a garage to house them, he stated.

Auto Fire Apparatus Speed Inquiry.

Orange, N. J.—Criticism has been raised because of the comparatively slow speed made by the Orange automobile fire apparatus in going to fires, and the Fire Board will take up the matter at its meeting. President Frank M. Plummer is in favor of placing a strict limit on the speed of the machine, while some of the other members hold that a good rate should be maintained.

GOVERNMENT AND FINANCE

Charter Vote July 1.

Cleveland, O.—Voters of Cleveland will decide on the provisions of the home-rule charter now being drawn up by the charter commissioners on July 1, according to an announcement by the commissioner.

Local Option on Commission Government Denied.

Harrisburg, Pa.—The special sub-committee of the House Judiciary Special Committee, in charge of the bill for commission form of government for third-class cities have determined that it could not insert a clause in the bill to give cities the right to determine by vote whether they desired the proposed manner of government or not.

Approve Four-Year Terms.

Madison, Wis.—That the people of Milwaukee are almost unanimously in favor of lengthening the terms of city officials from two to four years, was the statement made before the assembly committee on municipalities. Alderman A. G. Schwefel and Adam Meissenheimer and City Clerk P. F. Leuch appeared before the committee in favor of the bill. Assistant City Attorney Timlin also spoke for the lengthening of the terms. It was stated to the committee that the Common Council unanimously indorsed the plan and the three parties in Milwaukee were united on it. Alderman Schwefel said if it was put to a referendum of the people the vote in his ward at least would be 20 to 1 in its favor. Chairman Estabrook suggested the plan might be submitted to a referendum. Mr. Timlin said he could see no reason for that, as all parties were united in the demand for a four-year term for all city officials. City Clerk Leuch pointed out there would be no danger in lengthening the term as the recall now applied to Milwaukee and could be used.

Adopts New Government.

Lawrence, Kan.—Lawrence has adopted the commission form of government by a vote of 1,729 to 802. The women in all wards cast a heavy vote in favor of the commission. Agitation for new rule began about the first of the year. It arose largely as a result of trouble between the city and the water company over the water supply and the possibility of purchase of the company's plant by the city. The new rule will take effect May 1, 1914.

Missouri League Favors Commission Form.

Sedalia, Mo.—An overwhelming sentiment in favor of commission form of government was manifested in the convention of the Missouri League of Municipalities. It was said by the delegates of twenty-one cities that practically every one of the cities are preparing to take advantage of the enabling act passed by the last Legislature and adopt the new rule.

STREET CLEANING AND REFUSE DISPOSAL.

Will Pay More for Laying Street Dust.

Rockford, Wis.—At a recent meeting of the council it was voted to make the price per running foot of frontage 6 cents for street oiling instead of the old rate of 5 cents per running foot, the figure which prevailed all last year. The price was fixed on the recommendation of a joint committee of the council, the streets and alleys and the purchasing committees. The resolution of the joint committee was read and offered by Alderman Wilson, who explained that sudden increase in the charge of oil, an increase in the cost of sand and a boost in the wage of workmen, made it imperative for the city to get more than 5 cents per running foot for the oiling of the city thoroughfares. There are about forty blocks of street already provided for by petition, about three miles. Last year the city oiled about twenty miles of streets, so that it will be seen that only a small percentage of the work is already provided for in the form of fortunate petitions. The increased charge means an additional 50 cents for each lot of fifty feet frontage.

Chamber of Commerce Offers Prizes for Clean-Up.

Denison, Tex.—The Denison, Texas, Civic League, organized in 1907, with "A Cleaner Denison" for its slogan, on March 25 conducted the most successful clean-up campaign so far undertaken and this is how they did it. The twelve public schools were given a holiday on that date with the understanding that the school children would clean up their premises and place the trash in the alleys where it could be reached by the garbage wagons. Then as a further incentive the Denison Chamber of Commerce offered money prizes to five of the school children in each school district in the city having the cleanest premises, inspection to be made within a week after March 25. On clean-up day a company of the Boy Scouts of America, 40 strong, were enlisted and sent out as inspectors with instructions to report all unsanitary conditions. The Police Department had mounted officers on duty, and with all cooperating the venture was a great success.

Report Incineration Is Now Satisfactory.

Macon, Ga.—Macon's new incinerator has stood the test and proven satisfactory, according to Chief Sanitary Inspector Nottingham and Dr. Howard Williams, chairman of the Board of Health. A report recommending the purchase of the plant will be made by these two officials at the regular meeting of City Council, and it is expected that the report will be adopted and the incinerator accepted. The plant was erected by the Nye Incinerator Company of Oklahoma at a cost of $3,000.

Incinerator Now Under Construction.

Berkeley, Calif.—Work on the incinerator in Berkeley, which was contracted for by the city council several weeks ago, has been commenced by the Refuse Disposal Company of San Francisco. According to the terms of the contract the incinerator will be completed and ready for use in 180 days. The contract price is $61,250.

Sentenced to Clean Street.

Chelsea, Mass.—Judge Albert Bosson, of the Chelsea Court, has sentenced six boys, averaging about 15 years old, who were convicted of breaking into a freight car and stealing candy, to keep a street of the city clear of waste paper and rubbish for six months. Crescent avenue, which the boys must keep clean, is a long street, with few turnings, and many of their friends living along that highway are sure to make the task of picking up scraps of paper, tin cans, sticks, stones and cigar butts most interesting. The boys will be supervised in their work by two policemen.

RAPID TRANSIT

Waxahacie to Have Car Line.

Waxahacie, Tex.—That a local street railway line is to be completed and put in operation in Waxahacie by August was the announcement made following a conference between President Strickland of the Southern Traction Company and a committee of citizens appointed by the Commercial Club to designate the streets to be traversed by the proposed line. President Strickland is under contract with the city to construct four miles of local line, but it is understood that he has consented to exceed this mileage. The local system will virtually consist of two lines. One will begin at the intersection of Ennis and Vickery streets in the East End, traverse Vickery and Marvin avenue to University avenue, thence on University avenue to Trinity University. The other line will begin in front of the public school building on College street, traverse that street to Main street on the public square, thence on Main street to Grand avenue and on Grand avenue to Chautauqua Park.

Lengthwise Car Seats Barred.

Providence, R. I.— The City Council committee on railroads has refused permission to the Rhode Island Company to purchase prepayment cars in which longitudinal seats are placed for local use. The action was taken in reply to a petition sent the council by the company, which was referred to the committee for consideration. Prepayment cars already in use in Providence are of the cross-seat type, and the committee holds that these are the more desirable type. The Rhode Island Company, in its petition for permission to use the other style, gave as its reason that the cross-seat cars are too wide for the narrow streets of the city.

Street Car Men Wear "Safety First" Medals.

Atlanta, Ga.—Motormen and conductors of the Georgia Railway and Power Company have been presented each with a handsome bronze medallion in the form of a watch fob, bearing the inscription, "Safety first, safety always." This gift to the employes in charge of the street cars was made by the company as a token of membership in the Atlanta Public Safety League, and is intended to serve as a reminder that safety of the public should be the first and last consideration of the street car men. Over 1,000 of these fobs have been distributed.

For Lower Steps on Trolley Cars.

Jersey City, N. J.—State Utilities Commissioners, also C. W. Wilder, engineer of the Public Service Commission in the First District of New York; George T. McEwen, Arthur T. Dear, counsel for the Woman's Clubs of Jersey City and Hoboken, in their action to have the steps of trolley cars lowered, and Frank V. Z. Lane, consulting engineer of the Downtown Property Interests Association, visited the car shops of the Public Service Company in Newark to determine by what method the steps on trolley cars might be lowered. The party made the trip in the directors' car after the adjournment of the commission in the Chancery Chambers, at which the board heard testimony of Mr. Wilder. Mr. Wilder said the steps on all trolley cars could be lowered by changing the location of the springs. Mr. Wilder declared that all trolley car steps in New York must be no higher than fifteen inches from the ground. He recommended that trolley companies in New Jersey be compelled to place car steps at that height.

"Pay as You Enter" Cars at Salt Lake.

Salt Lake City, Utah.—May 15 is announced by the Utah Light & Railway Company as the time for introduction of the first pay-as-you-enter street car in Salt Lake. The new cars will be placed on the South Temple and Second West lines, eight in all to be placed in commission then. If the new wrinkle pleases patrons the pay-as-you-enter system will gradually be installed over all the local street railway system.

MISCELLANEOUS

Orange to Renew Plan for a Public Market.

Orange, N. J.—Efforts will probably be renewed in the near future by the Orange Common Council to establish a public curb market. An ordinance authorizing such a market was passed last fall, but farmers and others failed to avail themselves of the opportunity to do a retail business. Provision is made in the ordinance for a market along the curb on the south side of Main street, between Centre street and Military common. Some objection was raised to this location, and it is now proposed to establish the market in Scotland street, near Main street. Alderman Smith, chairman of the street committee of the Common Council, announced that an effort will probably be made soon to establish the market at the new location.

Interesting Children in Practical City Problems.

Montpelier, Vt.—April 25 was observed as Arbor Day and clean-up day in accordance with proclamations of the Governor and Mayor. In accordance with the plans of Mayor James B. Estil of interesting children in practical city problems, the proclamations were read in the schools and some time was given to the consideration of garden plans and home improvements. Later outdoor exercises were held, including singing and an address by the Mayor. In the afternoon no school sessions were held, the agreement being that the children should spend two hours in cleaning up the street and grounds about their homes.

Bonus to Ratepayers for Trees.

Wawota, Sask.—At the last meeting of the Village Council it was decided that a bonus of $1.50 should be allowed any ratepayers owning trees that have grown to the height of seven feet, and which have been planted under the direction of the council.

Regulating Height of Buildings.

Pittsburgh, Pa.—Mayor William A. Magee is said to be seriously considering having an ordinance introduced in Council, so several of the Councilmen have been told, which will limit the height of buildings to be erected in the city. The Mayor has become greatly interested in city planning has attended several meetings of the City Planners of the United States. He is said to have expressed himself forcibly at times regarding the height to which buildings are being erected. Councilman W. G. Wilkins, an engineer, says that London has no buildings half as high as some of those of Pittsburgh and that Chicago officials are considering an ordinance similar to the one proposed by Mayor Magee. The purpose in Chicago is said to be to prevent congestion, to cause an equable distribution of land values, and enforced spread of the business district, better fire protection, besides aesthetic reasons. The proposed measure has caused much discussion as to the city's right to pass such an ordinance. Mr. Wilkins said that some lawyers have told him that the city would be liable to damages to the property owners on the assumption that when he purchases land he buys it to the middle of the earth and up as far as the sky.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

Contracts—Debt Limit—Injunction.

City of West Covington vs. Dods.—In an action to restrain a city from entering into a contract on the ground that the indebtedness would exceed the revenue for the year, the issuing of an injunction was proper, in spite of an ambiguous disclaimer of intent to enter into the contract if the indebtedness would exceed the income, where all the actions of the city officials unmistakably show that the contract would be entered into, regardless of the indebtness.—Court of Appeals of Kentucky, 153 S. W. R., 964.

Sale of Horse—Conditions—Validity.

City of Rockland vs. Anderson.—The sale by a municipal corporation of an old horse, in consideration of the purchaser's agreement to keep her during her life, give her a good home, avoid overworking her, and when her usefulness was over to put her out of the way and bury her, was valid, upon a sufficient consideration, and, in the absence of fraud, not subject to repudiation, although the horse could have been sold for a cash consideration, and although the purchaser by giving her proper care and medical treatment was able to work her.—Supreme Judicial Court of Maine, 85 A. R., 1066.

Variance Between Bonds and Ordinances.

City of Oxnard v. Bellah, City Clerk.—A City Clerk could not refuse to sign municipal bonds because they differed from the bonds described in the preliminary ordinances in respect to the time when the bonds and interest thereon were made payable; it not being necessary or material that such time be specified in the ordinances.—District Court of Appeals of California, 130 P. R., 701.

Contracts—Recovery for Work—Estopped.

Missoula Street Ry. Co. v. City of Missoula.—Recovery may not be had of a city, under the doctrine of equitable estoppel, for taking up and replacing the tracks of a street railroad, for the purpose of installing a sewer, where the contract for the work was void, because not let, as required by the statute, to the lowest bidder.—Supreme Court of Montana, 120 P. R., 771.

Defective Streets—Acceptance of Dedication.

Sutton v. City of Bessemer.—Where, in an action for injuries on a city street, there was evidence that the city had exercised its charter power to grade, improve, and repair the same, it was error to direct a verdict for the city under a charter provision that it should not be liable for failure to exercise its powers to open, alter, and improve streets, though the place of the injury was within an open way covered by a posted notice that it was the private property of a railroad company.—Court of Appeals of Alabama,, 60 S. R., 954.

Improvements—Time of Completion—Extension.

Barber Asphalt Paving Company et al. vs. Hayward et al.—A municipality has power to extend the time for completion of a public improvement, where the time limited for completion was specified only in the contract, and not in the ordinance authorizing the improvement.—Supreme Court of Missouri, 154 S. W. R., 140.

Commission Charter—Powers of Old Council.

Woodbridge vs. City of Duluth et al.—Under the provision of the commission charter of the city of Duluth, adopted December 3, 1912, and going into effect 30 days thereafter, that the officers of the city, holding office at the time such charter takes effect, shall continue in office until the commission thereby provided for shall be elected and take office, the City Council chosen under the former charter, and holding over under the new by virtue of such provision, had the power to order the issue of city bonds authorized under the former charter, and likewise to order the extension of a sewer, and to provide for the purchase of an automobile for the Fire Department; there being involved in such matters only the ordinary responsibilities incident to the administration of municipal affairs.—Supreme Court of Minnesota, 140 N. W. R., 182.

Impure Foods—Validity of Ordinances.

Keiper vs. City of Louisville.—In its exercise of the police power to prevent the sale of impure foods, a city may provide for the inspection of such foods by a competent inspector, in places where they are offered for sale, without violating Const. prohibiting unreasonable searches and seizures.—Court of Appeals of Kentucky, 154 S. W. R., 19.

Special Assessments—Public Property.

City of Mt. Sterling vs. Montgomery County et al.—A city cannot, in the absence of express statutory authority, assess any part of the cost of a street improvement against abutting property owned by a county, without the consent of such county.—Court of Appeals of Kentucky, 153, S. W. R., 953.

Defect in Street—Notice.

City of Newport vs. Zimmerman.—Notice to the Superintendent of Streets that a grating over a catch-basin might catch upon the calks on horses' shoes and thus be moved, and that the wheel of the Mayor's vehicle had fallen into the basin after the grating had been loosened in that manner, was notice to the city.—Court of Appeals of Kentucky, 153 S. W. R., 969.

Streets—Vacation—Interest of Abuttings Owners.

Newark & B. B. Co. et al. vs. Town of Montclair.—The interest of owners of land abutting on a public street in the public easement in the street is not the private interest of part owners, but an interest shared with the whole public who have occasion to use the street; and the abandonment by the public authorities of the public easement in a portion of the street on which they do not abut is not a taking of property of the abutting owners.—Supreme Court of New Jersey, 85 A. R., 1028.

Certificate of Indebtedness—Transfer—Representations of Officers.

First Nat. Bank of New Castle vs. City of New Castle.—Where a City Treasurer, without authority, executes in the city's name a promissory note to a bank, reciting that he has deposited certificates of indebtedness of the city as collateral security, the bank cannot recover against the city on the certificates of indebtedness independently of the note, where they had been indorsed in blank by the original holders, and there was nothing to show that they were the individual property of the treasurer; the presumption in such case being that the bank knew that the certificates were the property of the city, which the Treasurer had no authority to pledge.—Supreme Court of Pennsylvania, 85 A. R., 1098.

Interstate Bridge—Power to Condemn Property.

Latinette vs. City of St. Louis.—The United States has power to construct, or to authorize the construction of an interstate bridge across a navigable stream to serve as a post road and a way for interstate commerce, and to that end may confer power on a state municipal corporation, authorized to construct and maintain such a bridge, to condemn land for approaches thereto in another state, independently of the laws of such state.—United States Circuit Court of Appeals, 201 F. R., 676.

Licenses—Equal Protection of the Laws.

Metropolis Theater Company et al., Plffs. in Err., vs. City of Chicago and Ernest J. Magerstadt.—Grading a municipal license fee for theaters according to the price asked for the highest priced seats other than box seats, rather than according to revenue, is not so palpably arbitrary as to offend against the guaranty of U. S. Const., 14th Amend., of the equal protection of the laws.—United States Supreme Court, 33 S. C. R., 441.

NEWS OF THE SOCIETIES

Calendar of Meetings.

May 20-23.
AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Spring Meeting, Baltimore, Md. C. W. Rice, Secretary, 29 West 39th street, New York City.

May 22-24.
OHIO SOCIETY OF MECHANICAL ELECTRICAL AND STEAM ENGINEERS.—Annual Meeting, Springfield, O. F. E. Sanborn, Secretary, Columbus, O.

June 2-6.
NATIONAL ELECTRIC LIGHT ASSOCIATION.—Annual Convention, Chicago, Ill. T. C. Martin, Secretary, 29 West 39th street, New York City.

June 5-7.
CONFERENCE OF MAYORS OF NEW YORK STATE.—Meeting, Binghamton, N. Y. William P. Capes, Secretary, 105 East 22d Street, New York City.

June 9-13.
INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE.—Twentieth Annual Convention, Raleigh Hotel, Washington, D. C. Major Richard Sylvester, Superintendent of Police, Washington, D. C., President.

June 10-11.
MINNESOTA STATE FIREMEN'S ASSOCIATION.—Annual Convention, Thief River Falls, Minn.

June 10-12.
NORTH DAKOTA FIREMEN'S ASSOCIATION.—Annual Convention, Bismarck.—H. L. Reade, secretary, Bismarck, N. D.

June 11-13.
MARYLAND STATE VOLUNTEER FIREMEN'S ASSOCIATION.—Twenty-first Annual Convention, Westport.

June 23-28.
INTERNATIONAL ROADS CONGRESS.—Third Congress, London, England. W. Rees, Jeffreys Secretary, Queen Anne's Chambers, Broadway, Westminster, London, S. W.

June 23-27.
AMERICAN WATER WORKS ASSOCIATION. Thirty-third Annual Meeting, Minneapolis, Minn. John M. Diven, Secretary, 47 State street, Troy, N. Y.

June 24-26.
UNION OF TEXAS CHIEFS OF POLICE AND CITY MARSHALLS.—Annual Convention Galveston, Tex.—Hollis Baum, Chief of Police, Waco, President.

June 24-26.
SOUTH CAROLINA STATE FIREMEN'S ASSOCIATION.—Annual Convention, Abbeville. Chief Elgin, Abbeville, S. C.

June 24-28.
AMERICAN SOCIETY FOR TESTING MATERIALS.—Annual Convention, Atlantic City, N. J. Edgar Marburg, Secretary, University of Pennsylvania, Philadelphia, Pa.

July 8-10.
INDIANA LEAGUE OF MUNICIPALITIES.—Annual Convention, Gary. A. P. Melton, Secretary, Gary.

July 22-25.
LEAGUE OF WISCONSIN MUNICIPALITIES. Annual Convention, Neenah, Wis.

August 19-22.
INTERNATIONAL ASSOCIATION OF MUNICIPAL ELECTRICIANS. — Eighteenth Annual Convention, Watertown, N. Y.

August 25-30.
FOURTH INTERNATIONAL CONGRESS ON SCHOOL HYGIENE, Buffalo, N. Y. Dr. Thomas A. Storry, Secretary General, College of the City of New York.

September 9-13.
AMERICAN PUBLIC HEALTH ASSOCIATION.—Annual Convention, Colorado Springs, Col.—S. M. Gunn, secretary, 755 Boylston street, Boston, Mass.

August 26-28.
CENTRAL STATES WATER WORKS ASSOCIATION.—Seventeenth Annual Meeting, Cedar Point, O.—E. P. Bricker, Secretary, Shelby, O.

September 1-6.
INTERNATIONAL ASSOCIATION OF FIRE ENGINEERS. Forty-first Annual Convention, Grand Central Palace, New York City. James McFall, Secretary, Roanoke, Va.

October 7-10.
AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS.—Twentieth Annual Meeting, Wilmington, Del.—A. Prescott Folwell, Secretary, 50 Union Square, New York City.

Playground and Recreation Association of America.

The convention was called to order at Richmond, Va., May 6 by President Joseph Lee. Mayor Ainslee made an address of welcome to the delegates, who had registered from twenty-five states and two foreign countries. Letters were read from President Wilson and ex-President Roosevelt.

The activities of the first day ended with a business meeting, which re-elected Joseph Lee, of Boston, president of the association. The other major officers for the ensuing year are: Theodore Roosevelt, honorary president; Harold F. McCormick, Chicago, first vice-president; William Kent, Kentfield, Cal., second vice-president; Robert Garrett, Baltimore, third vice-president, and Gustavus T. Kirby, New York, treasurer.

Directors for the three-year term ending in 1916 were elected as follows: Vincent Astor, Mrs. Joseph Auerbach, Grenville M. Clark, Henry P. Davison, John H. Finley and Marie Louise Harrison, of New York; Dwight F. Davis, St. Louis; C. M. Goethe, Sacramento, Cal.; Mrs. Howard Ives, Portland, Me.; G. M. Landers, New Britain, Conn.; Harold F. McCormick, Chicago; Mrs. Haper Sibley, Rochester, N. Y.; Harold H. Swift, Chicago; Edith Watt, Montreal, Canada, and Evelyn Sears, Boston.

Many of the addresses concerned the interests of municipalities in playgrounds.

George W. Ehler, director of the department of physical training in the University of Wisconsin, compared the merits of school board and park commission control of playgrounds, and found them both more or less defective. The best solution, he thought, was the control of playgrounds by a department of recreation under the direction of the city government, and bearing the same relation to it as the departments of public school, parks, health and similar civic divisions.

E. B. De Groot, Playground Association, Chicago, said:

The leasing of concessions to private interests, in his opinion, was foreign to the idea of a true public park. If it was an enterprise deserving municipal regulation, the city itself should rent the boats and provide the food and see that such conveniences are provided at the lowest cost. Parks, should be conducted for the benefit of the people and should not be exploited.

Speaking of favorite apparatus, Ralph Davoll, of Taunton, Mass., reported that the most universally popular amusement he had discovered was a fifty-foot chute down a hillside, which was constructed in a playground in that city. Everything in town shot the chutes, he said, from the dogs and cats to the grandmothers and grandfathers. After some 25,000 individuals had made the descent without accident, he said, the city officials condemned the chute as dangerous and it was removed.

An extensive discussion took place as to the liability of a municipality for accidents taking place on municipal playgrounds. A report from Buffalo, N. Y., showed that in that city there are $50,000 in damage suits pending against the city for accidents on the playgrounds, most of them of a minor character. In one case a boy sliding down a pipe cut himself on a nail and recovered $500. The situation in Buffalo, it was stated, has become absurd and has endangered the whole playground movement. The sense of the meeting was that the municipality ought not to be responsible for accidents upon its playgrounds, and that bills to that effect should be passed. Every precaution should be taken and the people then notified that they use the playgrounds at their own risk.

New York State Conference of Mayors.

President John J. Irving has announced that Attorney General Thomas Carmody will attend the fourth conference of Mayors and other city officials of the state which will be held in Binghamton on June 5, 6 and 7, and explain the home-rule law enacted at the session of the Legislature just ended. At the office of the secretary of the conference hundreds of inquiries about the new law have been received from municipal officials, all indicating that there is a general lack of information as to the exact powers which the measure confers upon the cities of the state. The advisory committee has invited Laurence A. Tanzer and J. Hampden Dougherty, who drafted the bill, also to attend the conference and take part in the home-rule discussion, which is scheduled for the opening session on Thursday afternoon.

Meridian Highway Association.

A Gulf Coast congress, where good roads in particular will be discussed, is being arranged at the present time, according to information received by John C. Nicholson, of Newton, Kan., secretary of the Meridian road, which stretches from Winnipeg for 2,000 miles southward through the Dakotas, Nebraska, Kansas, Oklahoma and Texas to the gulf. S. E. Colp of San Antonio, Tex., has the arrangements for the gulf congress in hand, and a feature of the convention will be that hundreds of delegates from states and districts along the Meridian highway will make the trip in automobiles over this great international highway.

A vast amount of construction work is to be done along the Meridian highway during 1913, every county along the entire route being busy. The Mayor of Winnipeg writes Secretary Nicholson that $100,000 will be spent this year, it being the intention to make the Canadian section of the highway, seventy-six miles, a model of good road building. Richland County, in South Dakota, will expend $4,000 on the road this year, according to T. O'Brien of Wahpeton, in a letter to Secretary Nicholson, and similar messages are being received from various counties clear along the entire route.

The Canadians expended $100,000 last year on the Meridian highway; North Dakota, $40,000; South Dakota, $75,000; Nebraska, $50,000; Kansas, $150,000; the Chisholm trail section in Oklahoma, $50,000; the interstate postal highway section in Oklahoma, $35,000, a total of $300,000 spent in 1912. The Meridian Highway Association is a member of the American Association for Highway Improvement, and Samuel H. Lea of Pierre, S. D., the Meridian president, is a member of the legislative committee of the National Highway Association. The Meridian association also became a member of the federal aid movement, delegates attending the national convention in Washington during the past month.

International Engineering Congress.

Engineers throughout the world will be invited to participate in the International Engineering Congress which will be held in San Francisco in 1915 in connection with other Panama-Pacific International Exposition activities.

The congress will be conducted under the auspices of the five national engineering societies, which are the American Society of Civil Engineers, the American Institute of Mining Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers and the Society of Naval Architects and Marine Engineers. These societies co-operatively have appointed a permanent committee of management, consisting of the presidents and secretaries of each and eighteen members residing in this city. The personnel of the committee follows:

Representing the American Society of Civil Engineers—George F. Swain, president; Charles Warren Hunt, secretary; Arthur L. Adams, W. A. Cattell, Charles Derleth, Jr., and Charles D. Marx.

Representing the American Society of Mechanical Engineers—W. F. M. Goss, president; Calvin W. Rice, secretary; W. F. Durand, R. S. Moore, T. W. Ransom, C. R. Weymouth.

Representing the American Institute of Mining Engineers—Charles F. Rand, president; Bradley Stoughton, secretary; H. F. Bain, Edward H. Benjamin, Newton Cleaveland and William S. Noyes.

Representing the American Institute of Electrical Engineers—Ralph Davenport Mershon, president; F. L. Hutchinson, secretary; J. F. de Remer and A. M. Hunt.

Representing the Society of Naval Architects and Marine Engineers—Robert M. Thompson, president; D. H. Cox, secretary; George W. Dickle, William R. Eckart and H. P. Frear.

The committee has effected a permanent organization, with Professor William F. Durand as chairman and W. A. Cattell as secretary-treasurer, and has established executive offices in the Foxcroft building, 68 Post street, San Francisco.

The scope and magnitude of the congress has not been definitely fixed, but it is intended that it shall be the most comprehensive ever held; that the progress made in every branch of the profession in the past decade shall be thoroughly reviewed and the latest developments and most approved practices be accurately stated by the leading engineers of the world. All papers read are to be collected and published and are expected to form a valuable engineering library.

PERSONALS

Arnett, George W., Lambertville, N. J., has been re-elected chief of the fire department.

Blevins, Floyd, Globe, Ariz., has been elected chief of the fire department.

Brashear, Edw. R., Brownwood, Tex., has been elected water superintendent, succeeding W. A. Butler. L. M. Rutland has been appointed sanitary commissioner.

Burton, H. K., Salt Lake City, Utah, has been appointed water engineer.

Cannon, Sylvester W., Salt Lake City, Utah, formerly water engineer has been appointed city engineer succeeding G. H. Blossom, resigned.

Charters, Wm., Nyack, N. Y., has been re-elected chief of the fire department.

Crabtree, C. F., Fort Worth, Texas, has been reappointed city electrician.

Davison, Ben. S., Houston, Tex., has been appointed chief of police.

Field, J. C., Dennison, Tex., has been appointed supervising engineer in charge of the construction of $200,000 worth of roads in Robinson county.

Fuller, Royal K, Albany, N. Y., has been appointed secretary to Highway Commissioner John N. Carlisle.

Garman, Harry O., Purdue University, has been appointed consulting engineer of the Indiana Public Utilities commission to take office July 1.

George, James F., Danvers, Mass., has been appointed chief of police.

Haggard, D. S., Winchester, Ky., who has been road supervisor for twelve years, has resigned to become manager of the Winchester Granite Block Company.

Hoffman, Frank, Alpena, Mich., has been elected chief of the fire department.

Kernen, John W., has been appointed superintendent of the Park Department, Lowell, Mass.

Lawless, John, International Falls, Minn., has been appointed chief of police by Mayor Kane.

Leopold, Geo. M., Updyke, N. Y., has become manager of the local Bureau of Municipal Research.

Lucey, P. J., Holyoke, Mass., has been appointed engineer of the waterworks.

Matthews, J. A., Grand Junction, Col., has been appointed chief of police, succeeding S. B. Hutchinson.

McBride, Mayor Andrew F., Paterson, N. J., has been appointed a member of the State committee to investigate municipal government in New Jersey.

McCue, Edw. A., Milton, Mass., has been appointed chief of the fire department to succeed the late Chief Choate.

Morgan, Arthur E., consulting engineer, Memphis, Tenn., has been engaged by the Citizens' Relief Committee of Dayton to make preliminary plans for the future flood protection of the city.

Morgan, E. R., Salt Lake City, Utah, has been appointed engineer of the State Road Commission succeeding D. W. Beers, who is now State engineer.

O'Connell, W. R., Keewatin, Minn., has been appointed chief of the fire department. John Webb has been appointed chief of police.

Odell, Chas J., Patchogue, L. I., N. Y., has been elected chief of fire department.

Phillips, Albert, Palatka, Fla., has been elected chief of fire department.

Porterfield, Wm. T., Fargo, N. D., has been elected president of the park board.

Richards, T. E., consulting engineer, East St. Louis, Ill., has been engaged by the city council of Granite City to supervise the construction of the sewer system.

Ricker, Geo. A., Buffalo, N. Y., has been appointed first deputy engineer by State Highway commissioner John N. Carlisle.

Rooney, Martin A., Nashville, Tenn., has been appointed smoke inspector.

Russell, Wm. R., Norfolk, Va., has been appointed superintendent of street cleaning.

Sachasse, Alfred, Saugus, Mass., has been appointed chief engineer of the fire department.

Saunders, E. F., Lowell, Mass., has been elected chief of the fire department to succeed Edw. S. Hosmer, retired.

Sullivan, Henry, Manchester, Mass., has been appointed chief of police.

Swab, M. W., Johnstown, Pa., has been appointed chief of police.

Sweet, Horace G., Utica, N. Y., has been engaged to estimate the cost of a municipal lighting plant for the village of Lyons.

Snook, C. A., and G. P. Smith, Fort Dodge, Ia., have been appointed county road engineers.

Van Riper, Silvers, Waterloo, Ia., has been elected chief of the fire department.

Windrow, R. J., Waco, Tex., assistant in the Department of Highways, Agricultural and Mechanical College, has been appointed county road superintendent under the new law.

The following city officials have recently been elected or appointed:

COLORADO.

Loveland—Mayor, O. D. Shields; City Clerk, Mrs. Georgia C. Rist.

Anaconda—Mayor, Ira Buckles.

Telluride—Mayor, Chas. F. Loebnitz; Clerk, W. A. Nicodemus.

Lyons—Mayor, W. R. Kincaid.

Palisade—Mayor, J. H. Larsen.

Longmont—Mayor, Ray H. Kiteman (re-elected); Clerk, Geo. H. Stonex.

Littleton—Mayor, J. E. Maloney.

Dillon—Mayor, C. C. Warren.

MUNICIPAL APPLIANCES

Kissel Kar Motor Street Flusher and Sprinkler.

The Kissel Motor Car Co., 158 Kissel avenue, Hartford, Wis., has placed on the market a patent combination uniform pressure street flusher and sprinkler, shown in the illustrations.

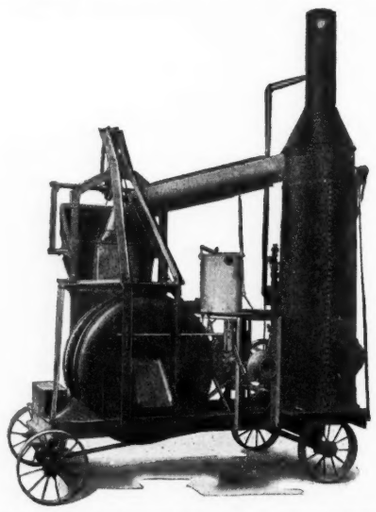
KISSEL COMBINATION MACHINE USED AS SPRINKLER.

It is equipped with a 1,000-gallon galvanized steel tank mounted on a regular 3-ton chassis. Pressure is produced by taking water by gravity from bottom of tank into two stage centrifugal pumps directly connected to motor. Pressure can be had from 20 to 60 lbs. according to speed of motor. Water is forced from pump into distributing pipes and out through adjustable nozzles for flushing and through two pipes to sprinkling attachments of vehicle type. The same pressure may be had when tank is partially full as when full, making it possible to get the benefit of all the water contained in the tank. Both the Flusher and Sprinkler are operated by hand levers and are under the driver's control at all times, and can be changed from one to the other in an instant, by shifting lever. The sprinkler will sprinkle the full width of a 60-ft. street from curb to curb, or can be closed down to 20, 30, 40 or 50 ft. streets, and can be cut off at any time, both sides at once or either side separately, making it possible to sprinkle in a street where the traffic is heavy. One tank of water will sprinkle 7 to 8 blocks of 50-ft. roadway, or will flush a distance of 3½ blocks.

Chain Belt Mixers.

The Chain Belt Company, Milwaukee, Wis., manufactures mixers in all ordinary sizes for all purposes. For paving contractors two styles of mixers are made, the street paving mixer for concrete pavements and concrete pavement foundation and the hot mixer for bituminous concrete. Descriptions of both follow:

After three years of constant study and application to the street paver problem, the Chain Belt Company now have ready for distribution the Chain Belt Street Paver. This mixer is of practically the same general design as the standard side discharge Chain Belt Mixer. The street paver has a chain belt drive, cast semi-steel bulge drum, chilled rollers with bronze bushings, all steel frame, etc. It is provided with a reversible traction drive so that the mixer can be moved forward or backward by its own power. The traction drive is fitted with a friction clutch, and to move the machine ahead it is only necessary to throw in this clutch, and to stop the machine, throw out the clutch. The traction drive is connected to both rear wheels



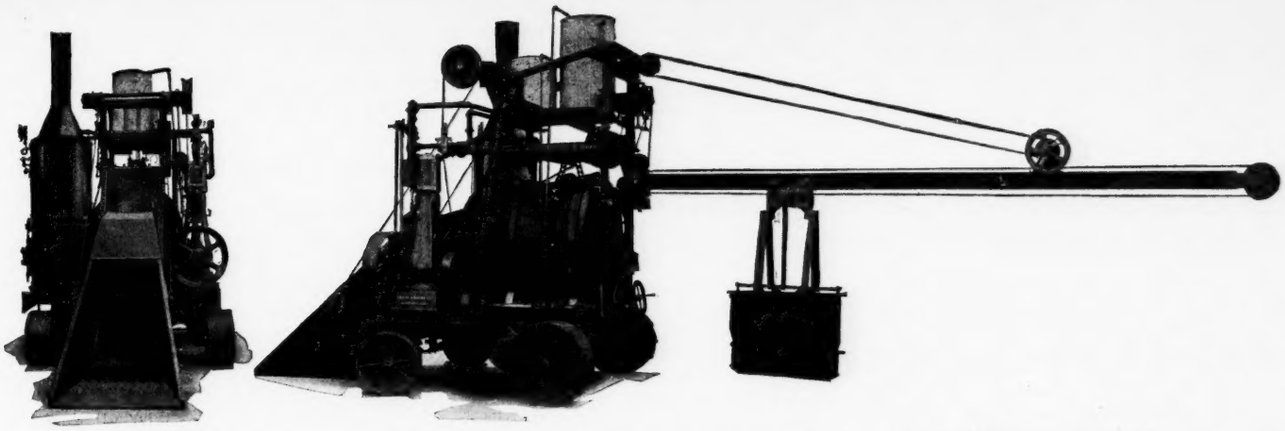
CHAIN BELT HOT MIXER, DISCHARGE SIDE.

and is sufficiently powerful to propel the machine up an incline of 15 degrees. The front axle is of the automobile steering knuckle-joint type, and the rear axle is a compensating differential. The latter is advantageous in that it will equalize the speed of the rear wheels in turning corners—wheels are heavy crucible steel castings 9 inches wide. No platforms or runways are required and if the material is placed sufficiently close to the machine it can be shoveled directly from the supply pile to the open end power loader bucket. All levers are so arranged that one man can operate the entire machine if necessary. The operator stands on a platform on one side of the machine, about 30 inches above the ground, and can operate the power loader, water tank, discharge and boom. The chain belt paver is capable of turning out a batch of concrete in 45 seconds.

The machine is equipped with a boom 20 feet long and delivery bucket. Concrete is discharged from the mixer into the delivery bucket, which travels on a single boom. The boom can be swung at an angle of 180 degrees, and a street 50 feet wide can be easily taken care of. The boom bucket will hold a full batch of mixed concrete and is provided with an automatic tripper, and the gate opens up automatically at any place where it is desired to deposit the concrete. When bucket returns to the mixer, the gate closes automatically. The same man who operates mixer levers, also controls the movement of the boom and bucket. In work where the road is less than 18 feet in width a gravity swivel chute may be substituted for the distributing boom. The chain belt paver is made in three sizes: 10, 15 and 23 feet respectively. The number 10 weighs 11,000 pounds, the number 15 weighs 14,000, and the number 23 weighs 17,000 pounds.

The Chain Belt Hot Mixer is used for mixing and heating bituminous asphalt macadam and repairing asphalt pavements. The heating pipe can be taken off and the hot mixer converted into a standard Chain Belt Concrete Mixer. The heat is taken from the hood of the boiler smoke stack by means of a 10-inch pipe and conveyed to the mixer drum on the charging side. A forced draught is secured by means of a powerful jet of steam which shoots across the top from the boiler flues into the heat pipe. The draught is regulated by means of a damper in the pipe which is operated by a lever. A temperature of over 600 degrees F. is maintained in the drum for continu-

KISSEL COMBINATION MACHINE USED AS FLUSHER.



LOADING HOPPER. CHAIN BELT PAVING MIXER WITH DISTRIBUTING BOOM AND BUCKET.

ous periods. The Chain Belt cast semi-steel drum is claimed to be particularly adapted for hot mixing. The drum is one-half inch thick at the thinnest place and will retain the heat much better than the thin sheet steel drums used on some mixers. There are no bolts or rivets on the interior and all surfaces are designed with liberal curves and in this way all pockets are eliminated and the consequent clogging of the material. As the aggregate is sprayed from the mixing blades and buckets in the drum every surface is dried and heated by immediate contact with the hot fumes. This rapid motion of the particles prevents burning of the material. The Chain Belt hot mixers are equipped with extra large boilers to insure sufficient heat for both steam purposes and use in the mixer drum. Before putting in the old asphalt for remelting, experience has shown that a lump of tar should first be melted in the drum as this lines the surface and prevents the asphalt sticking to the drum. The Chain Belt hot mixers are made in three sizes, 8, 12 and 20 feet.

Draeger Oxygen Apparatus and Its Two Municipal Uses.

The Draeger Oxygen Appartus Co., 422 First av., Pittsburg, Pa., make oxygen apparatus for rescue purposes which vary in many details which have been worked out after many years of careful experiments. Each type is adapted for a special use. The two kinds of special value for municipal departments are the portable outfits worn by men when going into places where there are gases that would make breathing otherwise impossible and outfits, also portable, which are used to revive persons overcome by gases, electric currents or by drowning. The illustrations show firemen equipped with the outfit which enables them to go safely into a burning building and the use of the reviving apparatus, called the Pulmotor, carried by ambulances.

Draeger Rescue Apparatus No. ½, for half hour use in gas and smoke, is distinctly a firemen's outfit and is made as light as possible. Heavier outfits are made for one and two-hour use. The lightest apparatus weighs fifteen pounds and can be packed in a space 14 by 14 by 4 inches. It can be put in service in 30 seconds. It provides an absolute seal from the atmosphere surrounding the wearer. The wearer is not encumbered with a helmet, the face and head being absolutely free except for the connection to the nostrils and mouth and in cases where gases are encountered which affect the eyes, gas tight goggles are provided and may quickly be adjusted. The working parts of the appartus are carried on the side under the left arm thus being out of the way and in a protected position. A positive circulation in the apparatus is maintained, the carbonic acid gas from respiration being carried through a potash regenerator and fresh oxygen being supplied from a high pressure cylinder and passing through a reducing valve to meet the respired air after it has been cleared from the poisonous gases of respiration. These are then carried together through a tube cooler to the breathing bag and thence to the mouth of the wearer. The air is constantly furnished in an abundant, pure and cool condition and no exertion is reqired on the part of the wearer to overcome the resistance of the apparatus.

The Pulmotor is designed primarily to induce respiration in persons who have been overcome by noxious gases, the apparently drowned and those overcome by electric shock, or in any other cases where the breathing of the patient has been stopped entirely, but where there is still slight heart action. The most remarkable results have been obtained in the short time in which this apparatus has been on the market, and many lives have been saved by the use of this machine. Those who see it for the first time often state that it is the most human mechanical device they have ever seen. The Pulmotor's action is to inflate and deflate the lungs in an absolutely regular manner and the pulsations are so timed that about the normal number of respirations per minute are obtained. The Pulmotor-case is equipped also with an inhalation device, which can be brought into use very quickly and be of serv-

FIREMEN WITH OXYGEN APPARATUS.

USING THE PULMOTOR.

ice after the patient regains his power to breathe. The cylinder is of sufficient size to allow forty minutes use of the apparatus and another cylinder can be adjusted to replace the empty one with only a few seconds loss of time. The whole device is very compact. It is encased in a wooden box about the size of an ordinary suit-case, with a single handle and a handle on each end so that either one or two persons may carry it, as is most convenient.

INDUSTRIAL NEWS

Cast Iron Pipe.—Chicago. Municipal lettings are coming out slowly. Prices have been reduced one dollar a ton. Quotations: 4-inch, $28.50; 6 to 12-inch, $26.50; 16-inch and up, $25.50. Birmingham. Accumulation of stocks is not great, although plants are running at about capacity. It is predicted that pipe plants will keep in steady operation through the remainder of the year. Quotations: 4-inch, $23.50; 6-inch, $21.50. New York. Business from private buyers is moderate in volume. Conservative manufacturers refuse to sell pipe at prices recently quoted in New England. Quotations: 6-inch, car loads, $23 to $24.

Lead.—The leading interest has reduced its price. The explanation is that the demand slackened with the higher quotations. Quotations: New York, 4.35c; St. Louis, 4.20c.

Concrete Piles.—The Raymond Concrete Pile Company, 140 Cedar street, New York City, have been awarded a contract for placing 600 concrete piles for the foundation of the venturimeter and valve house at the Porter avenue pumping station, Buffalo, N. Y.

Locomobile Truck.—The Bridgeport Hydraulic Company, Bridgeport, Conn., last year operated two Locomobile 5-ton trucks. The following figures, showing that the average cost of hauling was $0.094 per ton mile, have been published with their approval:

Annual Report of the General Asphalt Company.—On a total volume of business during 1912 of $14,995,323, the annual report of the General Asphalt Company shows net earnings of $1,343,698. After deductions to cover maintenance costs above the reserve for this purpose, there was left a net gain to surplus of $1,120,924, as compared with $818,785 for 1911. The net gain to surplus amounts to 8.5 per cent. on the preferred stock After paying the full 5 per cent. dividend on the preferred, there was earned a balance of 4.7 per cent. on the common stock.

Reduced to a basis of crude asphalt the tonnage sold and consumed amounted to 300,403 tons in 1912 as compared with 265,677 tons in 1911.

The continued development of the Company's business along the lines of a manufacturing and supply company, rather than a contracting company, is shown by the fact that the sales of asphalt reached a total of $9,009,309, or more than twice the amount of the paving account and substantially larger than all the other accounts put together.

During 1912 the Company constructed 1,106,287 square yards of sheet asphalt pavement, exclusive of the yardage constructed with its materials by other contractors. The latter, on the basis of asphalt tonnage delivered, constructed not less than 6,500,000 square yards, or 410 miles of streets of an average width of 27 feet. The tonnage of road asphalt increased from 20,479 tons in 1911 to 31,289 tons in 1912. Trinidad liquid asphalt for road purposes, as distinguished from street paving, increased from 4,653 tons in 1911 to 18,902 tons in 1912.

Reporting the progress of its oil development in Trinidad, the report shows that the production for the year ending January 31, 1913, was 247,208 barrels as against a production of 141,-233 barrels in the corresponding year previous. From February 1st the production has averaged 875 barrels a day as against an average of 675 in the year ending January 31. The company reports the conclusion of arrangements for the development of oil in Venezuela, where exploration wells have already begun to produce.

Allis-Chalmers Reorganization. — On April 16, 1913, Allis-Chalmers Manufacturing Company took over the properties and entire operation of the business of Allis-Chalmers Company, which latter company during the past year has been in the hands of a receiver. This change marks the end of the Allis-Chalmers receivership and the commencement of the administration of the new company.

Beginning with April 16, all business has been and will be conducted by Allis-Chalmers Manufacturing Company, which starts out under conditions promising success. The new company will operate all departments of the business as conducted by its predecessor and will carry out all contracts on hand for the sale of its products. It has no bonded indebtedness nor liabilities of any character. In addition to all assets of the former Allis-Chalmers Company the new company has over four million dollars additional cash for new working capital, which has been raised through the recent reorganization.

The new company will continue to operate the large West Allis Works and Reliance Works at Milwaukee, the Chicago Works, and in addition will control the operations of the Bullock Electric Manufacturing Company at Cincinnati. Otto H. Falk, of Milwaukee, who for the past year has been receiver of the Allis-Chalmers Company, and under whose management as receiver the operations of the business have shown marked improvement, has been elected president of the new company. The general offices will be at Milwaukee.

All properties of the new company are in good condition and its inventories and working capital on a sound basis.

COST OF OPERATION OF TRUCK NO. 2.

Month.	Variable expenses.	Fixed Charges. Garage.	Driver.	Interest.	Insurance.	Depreciation.	Total.	Miles.	Cost per mile.	Tons.	Cost Per Ton.	Cost Per Ton mile.	No. of Trips.	No. of Days.	Remarks.
April	$70.99	$10.00	$57.00	$6.87	$5.60	$60.69	$211.15	606.7	.348	245.2	.861	.145	52	19	
May	91.00	15.00	82.00	9.92	8.12	88.00	294.04	1,135.8	.259	240.4	.864	.106	70	23	$1 bonus
June	42.65	15.00	76.00	9.92	8.12	88.00	239.69	1,059.7	.218	344.5	.695	.091	73	24	$8 bonus
July	57.84	15.00	89.00	9.92	8.12	88.00	267.88	1,438.8	.186	473.	.564	.078	96	23	$8 bonus
August	118.94	15.00	91.00	9.92	8.12	88.00	330.98	1,348.0	.245	459.	.719	.098	91	24	$10 bonus
September	200.34	15.00	97.00	9.92	8.12	88.00	418.38	1,667.0	.251	582.4	.719	.098	114	25	$19 bonus

Invest, $4,764. Interest, average @ 5 %. Insurance, fire and liability, $97.50. Depreciation, 25% of ($4,764 less $540 for tires).

COST OF OPERATION OF TRUCK NO. 3.

April	$56.53	$7.50	$45.00	$5.56	$4.54	$49.13	$168.23	535	.314	185.5	.907	.133	39	15	
May	83.06	15.00	81.00	9.92	8.12	88.00	285.10	1,037	.275	362	.788	.109	73	23	
June	65.24	15.00	75.00	9.92	8.12	88.00	261.28	1,151	.227	380	.686	.091	76	25	
July	70.86	15.00	90.00	9.92	8.12	88.00	281.90	1,495.6	.188	4.96	.566	.076	101	26	$9 bonus
August	62.97	15.00	88.00	9.92	8.12	88.00	272.01	1,466	.185	490	.555	.074	97	24	$7 bonus
September	218.91	15.00	94.00	9.92	8.12	88.00	433.95	1,624	.266	561.7	.775	.104	110	25	$16 bonus

Investment, interest, insurance and depreciaiton, same as Truck No. 2.

TOTAL COST OF OPERATION.

Make.	No.	Variable expenses.	Fixed charges.	Total.	Miles.	Cost per mile.	Tons.	Cost Per Ton	Cost Per Ton mile.	Trips.	Days in use.
Locomobile	2	$581.76	$1,180.36	$1,762.12	7,292	.242	2,444.5	.721	.098	496	141
Locomobile	3	554.78	1,144.93	1,792.50	7,308.6	.233	2,475.2	.688	.093	496	138
Total	2	$1,136.54	$2,325.29	$3,464.62	14,600.6	.237	4,919.7	.706	...	992	279
Average per truck		568.27	1,162.64	1,732.31	7,300.3	...	2,459.8	...	...	496	139.5
Average per day		4.07	8.34	12.42	52.4	...	17.6	...	...	3.5	...
Average per mile		.078	.159	.237	...	...	...	...	...	...	...
Average per ton mile		.....	...	.094	...	...	...	...	.094	...	...

WEEKLY CONTRACT NEWS

ADVANCED INFORMATION
BIDS ASKED FOR

CONTRACTS AWARDED
ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO

STREETS AND ROADS

N. J.,	Camden	10 a.m., May 17.	Asphaltum road dust oil, 40,000 to 50,000 gals	J. P. Earl, Chrmn. Comm.
N. Y.,	Canastota	May 17.	Vitrified brick, 1 mile	E. B. Roberts, Vil. Clk.
Ill.,	Du Quoin	2 p.m. May 17.	Brick paving, 40,460 sq. yds	E. E. Jacobs, Pres. B. L. I.
R. I.,	Providence	9 a.m., May 17.	State highways. No. sections:	J. H. Edwards, Ch. Bd.
Cal.,	Sacramento	2 p.m., May 19.	State highways, 19 miles	A. B. Fletcher, Hwy. Eng.
Pa.,	Etna	5 p.m. May 19.	Improving several alleys	J. C. Armstrong, Bor. Clk.
Mass.,	Boston	noon, May 19.	Asphalt macadam, sidewalks, curbing, etc	L. K. Rourke, Comr.
N. J.,	Jersey City	2 p.m., May 19.	Improving McDougal St	E. B. See, Clk.
Ia.,	Belle Plaine	May 19.	Brick, 8,400 sq. yds	ewen, C. Clk.
Ala.,	Montgomery	May 19.	Gravel roads, 6 miles	T. H. Edwards, Co. Engr.
Ala.,	Rockford	May 19.	Surfacing with top soil; cost, $4,000	W. S. Kellar, H. Eng.
N. J.,	Metuchen	8 p.m., May 19.	Macadam, 3,500 yds	H. S. Wilson, Boro. Clk.
N. J.,	Newark	3 p.m., May 19.	Furnishing broken stone	F. A. Reimer, Co. Eng.
Ind.,	Richmond	May 19.	Oiling streets	Bd. of Pub. Wks.
Ind.,	Rushville	7.30 p.m., May 20.	Cement curb and gutter	C. Clk.
O.,	Ashtabula	May 20.	Shale blocks, 23,600 sq. yds	M. H. Turner, Dir. P. S.
O.,	Euclid	noon, May 20.	Sidewalks, several streets	Pease Eng. Co., Cleveland.
O.,	Freemont	May 20.	Brick pavement, 22,000 yds	W. F. Schepflin, City Engr.
Ala.,	Ashville	May 20.	Chert road	Road Comrs.
N. Y.,	Niagara Falls	May 20.	Paving two streets	Bd. Pub. Wks.
N. Y.,	Hudson	10.30 a.m., May 20.	Relaying 4,975 lin. ft. curbstone, 13,600 sq. yds. vitrified brick	H. M. James, Sec. Com. P. W.
N. J.,	Merchantville	8 p.m. May 20.	Macadam, concrete gutters	W. F. McAllister, Boro. Clk.
Ky.,	Louisville	10.30 a.m. May 20.	Furn. materials and reconstrn. roads	J. R. Gaines, Co. Eng.
Pa.,	Grove City	May 20.	Brick, asphaltic concrete, asphaltic macadam, 8,500 sq.yds.	L. L. McKay, Boro. Sec.
Md.	Denton	noon, May 20.	State aid highway, 2.92 miles	W. H. Anderson, Clk.
Canada,	Essex	May 20.	Permanent pavement, 3,000 yds	W. D. Beaman, Twn. Clk.
O.,	Akron	noon May 20.	Medina stone, brick, creosoted block	R. M. Pillmore, Dir.
La.,	New Orleans	May 20.	Pavement, any kind	Mayor Behrman.
O.,	Fremont	noon May 21.	Curbs, gutters, etc	R. R. Williams, Clk.
O.,	Painesville	May 21.	Brick, 33,500 yds	F. N. Downer, C. Engr.
Ind.,	Anderson	10 a.m., May 21.	Gravel roads	J. B. Bennefiel, Aud.
N. Y.,	Brooklyn	11 a.m., May 21.	Sheet asphalt, granite, sidewalks, etc	A. E. Steers, Boro. Pres.
N. Y.,	L. I. City	11 a.m., May 21.	Asphalt block, wood or iron slag, sidewalks, etc	M. E. Connolly, Boro. Prez.
O.	Youngstown	noon, May 22.	Improving and paving number of streets	W. H. McMillin, Clk.
O.,	Niles	noon May 22.	Vit. brick, asphalt wood, etc	J. E. Tregaskis, Clk.
O.,	Columbus	2 p.m. May 23.	Macadam, bituminous surface, 1.86 miles in Thorn Twshp.	J. R. Marker, State Hwy. Com.
O.,	Salinville	noon, May 23.	Block paving, 10,600 yds	R. D. Smith, Vil. Clk.
Wis.,	Lake Mills	7.30 p.m., May 23.	Improving street	City Clerk.
N. Y.,	Buffalo	11 a.m., May 24.	Paving and repaving	S. G. Ward, Comr.
Pa.,	St. Marys	2 p.m., May 24.	Brick, 11,000 yds	C. P. Hawley, Boro. Secy.
Vt.,	Burlington	2 p.m., May 24.	Curbing and sidewalks during 1913	F. W. Frechette, Ch. Comrs.
Cal.,	Ontario	May 25.	Paving; cost, $15,000	B. B. Mann, C. Eng.
Ia.,	Waterloo	May 26.	Paving several streets	City Clk.
N. J.,	Elizabeth	3 p.m., May 26.	Hard surface pavement, 17,357 yds., etc	J. L. Bauer, Co. Engr.
La.,	New Orleans	noon, May 26.	Gravel highway, 14 miles	W. E. Atkinson, Hwy. Eng.
Ind.,	Wayne	noon May 26.	Improving road	J. Howarth, Twn. Trustee.
Neb.,	Norfolk	5 p.m., May 26.	Asphaltic concrete, 47,000 yds.; cost, $97,000	H. H. Tracy, Eng.
O.,	Euclid	May 26.	Sidewalks	F. H. Shoaff, V. Clk.
Okla.,	Fort Sill	10 a. m., May 27.	Roads and walks	Constrn. Q. M.
Fla.,	Pensacola	May 27.	Granocrete, 22,000 yds	G. Rommel, Jr., Ch. Engr.
N. J.	Elizabeth	3 p.m., May 27.	Hard surface pavement, 30,000 yds	J. L. Bauer, Co. Eng.
O.,	Kenton	1 p.m., May 28.	Macadam, 5½ miles	County Comrs.
Ariz.,	Phoenix	5 p.m. May 28.	Bitulithic pavement	V. A. Thompson, Supt. Sts.
D. C.,	Washington	2 p.m., May 29.	Granite and sandstone curbing	Dist. Comrs.
O.,	Columbus	2 p.m., May 29.	Macadam, 2.5 miles in Napoleon Brick, 1 mile in Cambridge Concrete, 1.21 miles in Sandusky	Jas. R. Marker, St. Hwy. Com.
Okla.,	Durant	5 p.m., May 29.	Asphaltic concrete, 18,000 sq. yds	J. L. Foote, Mayor.
D. C.,	Washington	2 p.m., May 29.	Asphalt blocks, vit. bricks, curbing, sewer pipe castings	Dist. Comrs.
O.,	Uhrichsville	noon, May 29.	Park Valley Rd	H. O. Snyder, Twnshp Clk.
Ala.,	Red Bay	May 31.	Surfacing with gravel; cost, $4,000	W. S. Kellar, Hwy. Eng.
D. C.,	Washington	May 31.	Wood block at N. Y. Navy Yard; cost, $15,000	Navy Dept.
Wash.,	Seattle	June 1.	County roads, 6.4 miles	Co. Comrs.
Ala.,	Abbeville	June 2.	Sand clay, 9 miles; cost, $8,000	W. S. Kellar, Hwy. Eng.
Ind.,	South Bend	June 2.	Road in Lincoln Township	Co. Comrs.
Minn.,	Winona	8.30 p.m., June 2.	Wood block, 5,860 yds.; brick, 9,300 yds	H. B. Walling, C. Eng.
Ind.,	Vincennes	2 p.m., June 2.	Gravel roads	J. P. Scott, Co. Aud.
Ind.,	Vincennes	2 p.m., June 3.	Gravel roads	J. P. Scott, Co. Aud.
Wis.,	Dodgeville	June 3.	Sidewalks	City Clerk.
O.,	Cleveland	11 a.m., June 4.	Improving Linndale road	F. R. Lander, Co. Survey.
O.,	Springfield	2 p.m., June 6.	Highways, 7 miles	F. Hirtzinger, Ch. Co. Com.
Md.	Frederick	June 9.	State highway, 1 mile	L. G. Dinterman, Pres. Comrs.
N. Y.,	Newburg	5 p.m. June 10.	Paving Liberty street	City Clk.
Fla.,	Jacksonville	3 p.m., June 12.	Dolarway, asphaltic concrete, vit. blocks, granitoid, asphalt blocks, 93,000 yds	H. Gaillard, Ch. P. Wks.

SEWERAGE

N. D.,	Minot	May 19.	Storm sewer system	City Clerk.
N. J.,	Newark	3 p.m., May 19.	Small drain	F. A. Reimer, Co. Eng.
N. J.,	Bloomfield	8 p.m., May 19.	Pipe sewers, number streets	P. F. Davis, Town Clerk.
Ind.,	Crawfordsville	May 19.	Sewers, 24 and 36-in., cost $8,000	F. G. McIntyre, Ch. B. P. I.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Pa.,	Washington	May 19.	Vit. pipe, 3,200 ft., 4 to 8-in.	D. C. Morrow, Engr.
Pa.,	Etna	5 p.m. May 19.	Sanitary sewers	J. C. Armstrong, Bor. Clk.
N. Y.,	Olean	7.30 p.m., May 19.	Pipe sewer, 10-in.	Thos. Troy, Supt.
N. D.,	Bismarck	8 p.m. May 19.	Lateral sewer, 8-inch	R. H. Thistlethwaite, City Aud.
Ky.,	Madisonville	May 20.	Sanitary sewers, 4 miles	W. J. Dulin, Secy. Bd.
O.,	Marysville	May 20.	Sanitary sewer system	W. F. Brodrick, Vil. Clk.
Canada,	Stratford	noon, May 20.	Main sewer	A. B. Manson, C. Eng.
O.	Fostoria	May 20.	Vitrified or cast-iron pipe, 1,100 ft.	Chas. Latshaw, C. Engr.
N. J.,	Ridgewood	May 20.	Addition to disposal plant	F. Pfeifer, Comr. P. Imp.
Ia.,	Belmond	7.30 p.m., May 20.	Vit. pipe, 14,000 ft. 6 & 8 in.	G. C. Byers, Twn. Clk.
Ind.,	Boonville	7.30 p.m., May 20.	Brick or concrete; cost, $83,000	L. Meyer, C. Eng.
Mich,	Ann Arbor	May 21.	Vit. pipe, 1 mile 8-in.	M. Osgood, C. Eng.
Md.,	Baltimore	11 a. m., May 21.	High level interception, Sec. 6, vit. pipe, 8 to 15-in., 104,000 lin. ft.	Bd. of Awards.
Ind.,	Ft. Benj. Harrison	10 a.m., May 21.	Alterations to sewage disposal plant	Maj. R. S. Smith, Q. M. Corps.
N. Y.,	Long Island City	May 21.	Sewer in Far Rockaway	M. E. Connolly, Boro. Pres.
N. Y.,	Brooklyn	11 a.m., May 21.	Pipe sewer number streets	A. E. Steers, Boro. Pres.
N. J.,	Bloomfield	May 25.	Tile pipe sewer, 1 mile	E. Baechlin, Eng.
Tex.,	Pecos City	11 a.m. May 26.	Sanitary sewers and laterals, 10 miles	J. B. Gibson, Mayor.
Ind.,	Danville	May 26.	Sanitary sewer system; cost, $19,000	Town Trustees.
Pa.,	Pottstown	May 27.	Sewers, 30½ miles 6 to 30-in.	Sewer Comm.
Ky.,	Henderson	9 a.m., May 27.	Corrugated metal culverts	S. H. Kimmel, Engr.
Pa.,	Harrisburg	2 p.m. May 28.	Disposal plant and water works for hospital	S. G. Dixon, Comr.
O.,	Shelby	noon May 29.	Sewage treatment plant	Bert Fix, Vil. Clk.
Ia.,	Eldora	June 1.	Extensions, cost $15,000	S. B. Gardner, Eng.
O.,	Ravenna	June 2.	Settling tanks & siphons; cost, $10,000	W. H. Linton, Dir.
Pa.,	Reading	June 4.	Concrete sewers, 6,600 ft.; vitrified pipe, 3,900 ft.	E. B. Ulrich, City Engr.
N. J.,	Newark	July 1.	Three centrifugal pumping engines	J. S. Gibson, Clk. Comrs.

WATER SUPPLY

D. C.,	Washington	3 p. m., May 20.	Air lift pumping plant, Oklahoma City	Supervising Arch.
Wis.,	Turtle Lake	8 p. m., May 20.	Waterworks	F. G. McKenzie, V. Clk.
Ky.,	Madisonville	May 20.	Waterworks system	J. F. Dempsey, Ch. Bd. P. W.
Pa.,	Danville	noon, May 20.	Settling basin coagulant apparatus, etc.	Boro. Secy.
R. I.,	Providence	May 21.	Pumping engine, 30,000 gal.	J. H. Gainer, Mayor.
Ill.,	Bloomington	May 22.	Extending water main system, 8,263 lin. ft. 6 to 20-inch pipe, etc.	Elmer Folsom, City Engr.
O.,	Akron	May 23.	Pumping engine, 15,000,000 gals. capacity	R. M. Pillmore, Dir.
N. J.,	Hawthorne	8.15 p.m., May 23.	Drilling 8-in. well	R. MacFarlan, Mayor.
Mo.,	St. Louis	May 26.	Intake tower tunnel and screen chamber	E. R. Kinsey, Pres. B. L. I.
Okla.,	Ft. Sill	May 26.	Motor driven pump, wooden tank	A. U. Faulkner, C. Q. M.
N. C.,	Fort Caswell	May 26.	Concrete reservoir, 400,000 gals.	J. R. Campbell, Comr.
Ill.,	Moline	2 p.m., May 26.	Pump and pit	L. O. Jahns, Comr.
D. C.,	Washington	May 28.	Deep well pumping plant at London, Ky.	Superv. Arch.
Ont.,	Ft. William	May 29.	Tunnels under rivers	City Clk.
Canada,	Dunnville	9 p.m., May 31.	Water main, 10,000 ft.	R. G. Kyd, Supt.
N. Y.,	Upper Jay	June 1.	Water works system	R. O. Beede, Ch. Com.
Neb.,	Ralston	10 a. m., June 3.	Cast-iron pipe, 31,000 ft., 4 to 8-in.	C. M. Skinner, Ch. V. Bd.
Wis.,	Dodgeville	June 3.	Waterworks	City Clerk.
Md.,	Baltimore	11 a.m. June 4.	Mechanical filters, 32 catch basins, etc.	James H. Preston, Mayor.
Mont.,	Billings	June 17.	Pumping plant	C. E. Durland, City Engr.
Egypt,	Cairo	July 1.	Furn. equipm't for pump'g station, 7,000,000 meters.	Pub. Works Ministry.

LIGHTING AND POWER

O.,	Toledo	10 a.m., May 19.	Power house for hospital	C. J. Sanzenbacher, Co. Aud.
Ind.,	Goshen	3 p.m., May 19.	Generator, 250 KVA. lamp equipment, etc.	Burns & McDonnell, Engrs., Kansas City, Mo.
Ind.,	Indianapolis	May 19.	Fire headquarters	Bd. Pub. Wks.
Mich.,	Reading	May 20.	Power plant and equipment	B. K. Goodman, Engr.
Fla.,	Chipley	2 p.m., May 20.	Generator, 2,300 volt, and engine	A. A. Myers, Pres.
Canada,	Pas	1 p.m., May 20.	Steel pipe, 14,000 ft. oil engines, generators, etc.	H. H. Elliott, Secy.
Canada,	Strassburg	8 p. m., May 20.	Electric light plant	S. L. A. Smith, Secy.
Mich.,	Reading	May 20.	Two high pressure tubular boilers	Vil. Clk.
O.,	Urbana	noon May 21.	Horizontal compound crank and fly wheel pumping engine	J. W. Flaugher, Dir.
N. J.,	Paterson	2 p.m., May 21.	Maintaining 200 or more arc lamps	W. H. Mason, Ch. Comm.
Pa.,	Wilkes-Barre	noon, May 22.	Gasoline lights, 64	Park Comm.
N. J.,	Camden	8 p.m., June 15.	Power station, boiler & generating equipment, electrical work for station & distribution system	F. A. Finkelday, Chrmn. Com.
N. J.,	Camden	June 16.	Underground conduits, 219,000 ft., subway, 24,000 ft., 128 standards, &c.	C. Council.
Chile,	Santiago	Sept. 10.	Illuminating plant for port works	Comision de Puertos.

FIRE EQUIPMENT

O.	Akron	May 20.	Three comb. motor pumping engines, chemical and hose wagons, 1 aerial truck, 2 comb. chemical and hose wagons, 1 supply wagon, 3 tractors	Dan Stein, Director.
N. J.,	Camden	8 p.m. May 22.	Motor aerial truck; motor triple combination engine; motor steam fire engine; one or more tractors; repairing steamer	H. R. Read, Ch. Com.
N. J.,	Jersey City	3 p.m. May 23.	Motor triple, comb. pumping engine, motor aerial truck.	H. J. Vreeland, Clk.
Md.,	Brooklyn	May 24.	Fire alarm system	O. Zentgraff, Ch. Com.
N. J.,	Kearney	May 28.	Motor triple combination apparatus	Twn. Council.
D. C.,	Washington	2 p.m., May 29.	Two motor chemical and hose wagons, one five passenger car	Dist. Comrs.

BRIDGES

Mass.,	Barnstable	May 17.	Concrete girder bridge	F. C. Wales, Eng., Boston.
Canada,	Toronto	noon, May 19.	Concrete arch over river	E. A. James, Chf. Eng.
N. J.,	N. Brunswick	2.30 p.m., May 19.	Concrete bridge	P. H. S. Hendricks, Dir.
Kan.,	Kansas City	May 19.	Reconstrn. bridge	F. M. Halcomb, Co. Engr.
Canada,	Angus	May 19.	Concrete bridge	F. Barber, Eng., Toronto.
Ala.,	Mobile	May 19.	Concrete bridges and culverts	Co. Comrs.
Canada,	Wellington	1.30 p.m., May 20.	Seven concrete bridges	Bowman & Conner, Engs.
D. C.,	Washington	2 p. m., May 20.	Stone Bridge	Secy. Smithsonian Inst.
Ill.,	Mt. Carroll	1 p.m., May 21.	Three concrete bridges	A. Lindsay, Twn. Clk.
Va.,	Bowling Green	noon May 22.	Two bridges	P. St. J. Wilson, St. Hwy. Com.
N. Y.,	Rochester	noon, May 26.	Steel bridge, concrete floor, cube pavement	I. Budlong, Ch. Com.
N. J.,	Newark	2 p.m., May 22.	Rebuilding stone arch bridge	F. A. Reimer, Co. Eng.
Ind.,	Greenfield	May 23.	Bridges, 19.	L. Wood, Co. Aud.
N. Y.,	Rochester	noon May 26.	Steel bridge, concrete floor	I. Budlong, Chrmn. Com.
O.,	Youngstown	11 a.m. May 28.	Reconstructing abutments and pedestals	I. M. Hogg, Co. Aud.
Ill.,	Streator	2 p.m., May 31.	Concrete bridge	F. Burtwell, Twn. Clk.
W. Va.,	Lewisburg	June 3.	Concrete bridges	J. E. Bougher, Eng.
O.,	Hamilton	June 4.	Several concrete bridges	Co. Comrs.
O.,	Springfield	2 p.m., June 5.	Reconstructing three bridges	J. M. Pierce, Co. Aud.
D. C.,	Washington	2 p.m., June 24.	Seven-span concrete bridge	District Comrs.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
			MISCELLANEOUS	
Ind.,	Indianapolis	10 a.m., May 19..	Retaining wall	W. T. Patten, Co. Aud.
Pa.,	Chester	8 p.m., May 19..	Street cleaning	Wm. Provost, Jr, Ch. Comm.
N. J.,	Trenton	11 a.m., May 19..	Three motor trucks, 3 macadam steam rollers, 3 gasoline steam rollers, 6 road machines, 6 sprinkling wagons, 18 dump wagons, 2 tank wagons, 2 pressure distributors, road signs, gasoline pumps, small tools, etc; also ligin, inorganic and bit. binders	E. A. Stevens, Comr.
N. Y.,	New York	10.30 a.m. May 19..	Two two-ton motor trucks	Josh. Johnson, Fire Comr.
N. Y.,	New York	noon, May 20..	Watering trucks, 24 street sweepers	W. H. Edwards, Comr.
Pa.,	Wilkes Barre	noon, May 20..	Services of one or more automobiles	F. R. Hendershot, Compt.
D. C.,	Washington	May 20..	Automobile ambulance	Navy Dept.
D. C.,	Washington	2 p.m., May 20..	Concrete masonry, 200 cu. yds	D.st. Comrs.
N. Y.,	L. I. City	11 a.m., May 21..	Final disposition of garbage	M. E. Connolly, Boro. Pres.
Md.,	Baltimore	11 a.m. May 21..	Fallsway viaduct, 14,000 cu. yds. concrete, etc	J. H. Preston, Mayor.
Cal.,	Los Angeles	May 23..	Dump cars and industrial locomotives	Bd. of Pub. Works.
N. Y.,	New York	2 p.m., May 22..	Improving bridge Plaza	A. J. O'Keefe, Comr.
O.,	Youngstown	noon, May 23..	City building	W. H. M McMillin, Clk
Mo.,	St. Louis	noon, May 23..	Sections of jail	Bd. of Pub. Imp.
D. C.,	Washington	May 24..	Oil storage tank; cost, $20,000	Navy Dept.
Minn.,	Chengwatana	1 p.m., May 26..	Town hall	Town Clerk.
Fla.,	Tampa	noon, June 3..	Jail	J. L. Hackney, Chrmn. Comrs
Cal.,	Los Angeles	June 20..	Bldg. & operating garbage disposal plant. Reduction or incineration	Bd. of Public Works.

STREETS AND ROADS

Marion, Ala.—At session of board of county commissioners $1,000 from bond issue was awarded to Walthall beat for improvement of roads. It is now believed that several miles of addional highways will be built from bond issue, and four-mile link near Dallas county line completed, thus insuring good roads through from Birmingham via Tuscaloosa, Greensboro and Marion to Selma.

Sacramento, Cal.—Bill No. 1570 has been passed. The bill carries an appropriation of $100,000 for survey and construction of state highway from Bridgeport, county seat of Mono, to Independence, county seat of Inyo. Proposed state highway would pass through Tioga Pass, Mammoth near Bishop and Big Pine and run down almost to Mt. Whitney.

San Mateo, Cal.—San Francisco board of supervisors has informed San Mateo county highway commission that it will improve San Bruno road within city limits so as to provide continuous paved thoroughfare long bay shore from metropolis down peninsula.

Denver, Colo.—Engineer Maloney of state highway commission, will go to Douglas county to aid commissioners of that county in beginning improvement of state road from Sedalia via Castle Rock to Palmer Lake, distance of 27 miles. County and state together will spend $18,000 on this road.

Bridgeport, Conn.—Widening of Barnum avenue is under consideration.

Hartford, Conn.—Favorable report will be made by committee on roads, rivers and bridges on bill to provide for building trunk highways with so-called permanent pavements by bond issue for $5,000,000, as advocated by Good Road association.

Hartford, Conn. — Board of contract and supply has opened bids for concrete paving, concrete resurfacing and granite paving. Bids for granite paving on Spruce st., from Church st. north, were as follows: J. Harry Lloyd, granite blocks, $2.75 per sq. yd.; Edward Balf Co., $2.68; F. B. & W. H. O'Neil, $2.48. Lowest bid will depend somewhat on what total cost of job will figure out, as there is difference in figures submitted for concrete gutters, concrete foundations and cost of excavations per cubic yard. Bids for relaying about 14,000 sq. yds. of sheet asphalt on Main st. at the junction of Windsor ave., and on Farmington ave., from Asylum st. to Woodland st., were as follows: Warren Bros. Co., asphalt, $1.50 per sq. yd.; Union Paving Co., $1.24 per sq. yd.; Edward Balf Co., $1.39 per sq. yd. Same conditions enter into award of this contract as in granite paving, also in awarding of contract for laying about 9,300 sq. yds. of new asphalt surfacing on Front st., from State st. to Morgan st.; Pleasant st., from Windsor st. to the railroad, and on Marsh court. Bids were: Warren Bros. Co., $1.50 per sq. yd.; Union Paving Co., $1.14 per sq. yd.; Edward Balf Co., $1.27 per sq. yd. Bids were referred to engineering department.

Delaware City, Del.—Road commission has presented report to council and advises that bids be asked for paving streets.

Dover, Del.—Improvement of roads in Kent county is under consideration.

Ocola, Fla.—Commissioners have passed resolution for a hard-surfaced road from Ocola to western boundary line.

Macon, Ga.—Paving of Houston road is being discussed.

Boise City, Idaho.—Bonds in sum of $50,000 will be voted on June 3 for paving intersections.

Moline, Ill.—More than seven miles of paving of all descriptions will be laid in Moline this year, cost of which has been estimated to be $260,468.

Peoria, Ill.—Resolution has been passed favoring an ordinance providing for paving of Cook st., from Eighth to Eleventh sts. Resolution also has been passed for paving alley between Adams and Monroe sts., and between Eighth and Ninth sts.

Franklin, Ind.—Board of county commissioners of Johnson county has ordered bond issue of $5,600 to cover cost of constructing the M. M. Pitcher gravel road.

Indianapolis, Ind.—Resolution to widen Prospect street, from Keystone avenue to Sherman drive, to uniform width of 60 ft., has been adopted by board of public works.

Richmond, Ind.—The Dickinson Trust Co. and Second National Bank of Richmond have purchased the $51,000 worth of Wayne township gravel road bonds.

Clinton, Ia.—Resolution instructing City Engineer to prepare plans and specifications for paving Tenth ave., from Fourth st. to Eighth st. with either wood block, brick or concrete, with bituminous top coat, has been carried.

Waterloo, Ia.—Bids will be advertised for paving of several streets.

Carlisle, Ky.—Movement has been started to rebuild and repair portion of old Maysville and Lexington turnpike and make of 12 miles in this country a modern road in every respect.

Portland, Me.—Department of Public Works has planned improvement of various streets. Bion Bradbury, Jr., Comr. of Public Works.

Baltimore, Md.—By plans adopted by board of estimate a new street—36 ft. in width—will be made from intersection of Fayette and Aisquith streets to Baltimore by condemnation of houses lying between No. 23 public school and McKim school.

Hagerstown, Md.—Ordinance has been passed for paving of Potomac avenue and South Potomac street.

Boston, Mass.—Directors of Chamber of Commerce have indorsed recomendations of city planning and municipal and metropolitan affairs committee favoring immediate expenditure of large sum by city for permanent street improvements, in addition to $300,000 appropriated from tax levy for new streets.

Boston, Mass.—In compliance with recommendation of Good Government Association city council committee on finance has unanimously favored raising $500,000 inside city's debt limit for new streets in accordance with provisions of special legislative act authorizing city to borrow that sum annually for five years for new streets.

Boston, Mass.—Widening of Avery street has been authorized.

Haverhill, Mass.—Council has passed bond order of $50,000 for street improvements.

Lynn, Mass.—Petition has been received asking that Munroe street, Union street and Central Square be smooth paved.

Charlotte, Mich.—Board of commissioners will immediately advertise for bids for construction of several more miles of roads. Over 17 miles of state reward roads will be erected in this county this summer.

Empire, Mich.—Special election will be held on May 12 for voting on question of bonding township of Empire in sum of $6,000 for building good roads.

Ithaca, Mich.—Proposition to bond for $20,000 for paving has been carried at special election by vote of 429 for to 24 against.

Aurora, Minn.—Paving of Jackson street is being discussed.

Duluth, Minn.—Construction of boulevard to cost $1,000,000, along shore of Lake Superior is being discussed.

Duluth, Minn.—Plans are being made by George J. Bloedel, superintendent of street maintenance for repair of streets during coming season.

Eveleth, Minn.—Improvement of Miller trunk road is being discussed; estimated cost, $100,000.

St. Paul, Minn.—Mayor Keller proposes to improve suburban streets up to their connection with country roads and to provide shorter routes for farmers to reach main avenues into center of city.

St. Paul, Minn.—Vitrified brick has been ordered for Snelling avenue, between Grand and University, by board of public works.

St. Paul, Minn.—Building of national highway from Mankato to Twin Cities is assured.

Virginia, Minn.—Street committee will construct a cut-off from Gilbert road to Eveleth at cost of $2,000.

Winona, Minn.—The Winona county board, by unanimous vote, has approved of plan for launching construction of permanent roads in Winona county to cost $600,000, this being in addition to expenditure of $120,000 for 17 miles of concrete highway in Winona county, for which contracts have already been let.

Hannibal, Mo.—About $2,000 is to be expended on road extending from Parish gravel road at Hudesburg to Rensselaer. This road will be link in Hannibal-St. Joseph cross-state highway.

St. Joseph, Mo.—It is proposed to pave from Highland avenue to Independence, on Seventh, thence west to Fifth, thence north to Hamburg, and from there west, giving easy access to section of city now without paved roads.

Roswell, N. M.—Paving of Main street is being petitioned for.

Elizabeth, N. J.—Plans have been made for improvement of more city streets.

Elizabeth, N. J.—Resolutions have been adopted to have Court st., Morris ave. and North Broad st. improved at once.

Irvington, N. J.—Ordinances have been passed for improvement of various streets.

Jersey City, N. J.—Resolution providing for issuing of 110 $1,000 bonds for purpose of raising funds for boulevard commission has been passed by board of freeholders.

Kenilworth, N. J.—Borough Engineer Higgins has reported that estimated cost for macadamizing of Michigan ave., from Boulevard to Roselle Park line would be about $9,200 for roadway of macadam 10 ft. in width. Estimated cost of repairing Boulevard is about $5,400, making total of $15,000 in road improvements needed in borough this spring.

Kenilworth, N. J.—Ordinance for laying of sidewalks in Monroe ave., Washington ave. and in Twenty-first st. has been passed by Borough Council. Borough Engineer has been instructed to procure plans and specifications for doing the work.

Millbank, N. J.—Bids will be received on May 20 by the treasurer of the city of Millville for the purchase of street improvement bonds of the city of Millville, of the par value of $60,000. George B. Worstall, city treasurer.

Oaklyn, N. J.—By Oaklyn Borough Council, contract for laying sidewalks all over town to David Thomas Co., of Woodbury.

Trenton, N. J.—City Counsel has been directed to prepare ordinance providing for extension of Riverside ave., from Atterbury to Riverdrive aves.

Brooklyn, N. Y.—Oiling of Bay Ridge roads is being considered.

Cuba, N. Y.—Proposition of bonding village for $10,000 for paving of South street from Erie crossing to Main street will be voted on.

Dolgeville, N. Y.—Special election will be held May 20 to vote on appropriation of $3,500 for new road machinery.

Kingston, N. Y.—Common council has adopted ordinance providing for oiling of streets by street superintendent.

Newburgh, N. Y.—Paving of Liberty st. has been ordered.

Newburgh, N. Y.—Property owners in Central ave., between Henry and North sts. have petitioned City Council to have that street graded, guttered and curbed and to have concrete sidewalks laid.

Port Jervis, N. Y.—Council advocates more street improvements.

Poughkeepsie, N. Y.—Board of public works has authorized improvements of various streets.

Schenectady, N. Y.—Members of City Engineer Wooley's force are making survey for extension of Jay and Dakota streets from State to South Centre streets.

Schenectady, N. Y.—Ordinances have been passed for improvement of various streets. Frank Cooper, Corporation Council.

Syracuse, N. Y.—Mayor Schoeneck has approved bill making state appropriation for paving with brick state road from Wolf st. to north line of Liverpool. Both measures have been returned to Albany for action of Governor Sulzer.

Syracuse, N. Y.—Common council has approved Kelly-Walters bill appropriating $60,000 to provide for brick instead of bituminous macadam for surface of new state road to Liverpool.

Farmington, O.—Farmington township property owners will build several strips of improved roads. Special election held on question of issuing $50 000 road improvement bonds has been carried.

Lowellville, O.—City Council has passed resolutions for grading of various streets.

Springfield, O.—County Commissioners have decided to issue bonds to extent of $100,000 for repairing of roads and bridges damaged by floods.

Struthers, O.—Arrangements practically have been completed for paving with brick of unpaved portion of Bridge st. Bids will shortly be advertised for. Definite plans relative to bonds with which to proceed with construction work will be made by Council. It is estimated that pavement will cost not less than $15,000.

Toledo, O.—City Solicitor Schreiber has been instructed by finance committee of council to prepare legislation to appropriate $2,500 to be used in oiling macadam pavements in city.

Youngstown, O.—Resolutions have been adopted for improvement of various streets.

Bethlehem, Pa.—Bethlehem borough will pave Broad street, one of its principal thoroughfares, with ameisite.

Butler, Pa.—Improvement of Three Degree road has been authorized.

Butler, Pa.—Improvement of plank road has been assured.

Chester, Pa.—Voters have authorized $59,000 loan for public highways.

Hazleton, Pa.—Cranberry avenue and North Broad street will be improved.

Johnstown, Pa.—Paving of Wonder street has been authorized.

Mauch Chunk, Pa.—To James P. Bennyhoff, of East Mauch Chunk, for paving Mauch Chunk streets with vitrified brick for about $40,000.

Meadville, Pa.—Bond issue of $60,000 has been passed for paving and sewerage improvements.

McKeesport, Pa.—By street committee, for curbing, grading and paving on Windsor st., W. Hengstler & White, at $1,207.30.

Philadelphia, Pa.—Paving of Chestnut st. with wood block from Front to 23d sts. has been planned. There will be about 35,000 sq. yds. of wood block required to pave Chestnut st. from river to river, and approximate cost will be near $100,000.

Phoenixville, Pa.—Petition is being circulated to have state macadamize 7 miles of road between Phoenixville and Parkerford.

Scranton, Pa.—Ordinances have been passed authorizing grading, paving and curbing of Vine street and various other streets. Ellsworth Kelly, City Clerk.

Sharon, Pa.—Special election will be held June 12 for voting on $50,000 bond issue for various street and sewer improvements.

Williamsport, Pa.—Ordinance has passed first reading providing for paving Louisa st., from Hepburn st. to Louisa st.

York, Pa.—Bills are being considered for improvement of several highways under per-foot front plan.

York, Pa.—Highway commissioners will be instructed to resurface George street, from Clarke alley to Philadelphia street with 3-in. wood blocks, at $2.75 per sq. yd. He will also resurface West York avenue with Westrumite. Cost for work, which will be under supervision of the highway commissioner, will be $1.65 a sq. yd.

Fall River, R. I.—Improvement of Cory st, is being discussed; estimated cost, $16,800.

Chattanooga, Tenn. — Chattanooga's new "Riverside drive," which will extend from old corporation limits on Harrison ave. to the north terminal of the crest road on Missionary Ridge now seems assured. It will cost in neighborhood of $25,000.

Austin, Tex.—Attorney general's department has approved Culberson county special road bonds to amount of $50,000; also Atascosa road district No. 2 bonds for $20,000.

Bonham, Tex.—City Council has decided to expend $8,000 in concrete sidewalks immediately and committee from council went over city and selected locations for walks.

Denison, Tex.—Property owners on Gandy st. will petition City Council to pave street a distance of 12 blocks with asphalt macadam.

Denton, Tex.—Petitions are out for $125,000 road bond issue in Justice Precinct No. 2, Pilot Point.

Freeport, Tex.—Representatives from Freeport, Velasco, Angleton and Cluett communities have agreed upon plan, which, if carried in election, which Commissioners' Court is to be asked to authorize, will provide for building of 75 miles of shell roads in southern section of Brazoria county. Under plan agreed upon three new road districts are to be formed between Angelton and Freeport. Bond issues for these districts, amounting to $310,000, will be asked for and election in each district to be held on same date.

Temple, Tex.—Movement has been launched for paving South First st., from Santa Fe Railway tracks to City limits, distance of 10 blocks.

Salt Lake City, Utah.—County commissioners have decided to spend $3,000 for road improvements.

Richmond, Va.—Large delegation of South Richmond citizens have asked Administrative Board for smooth paving of 12th st., South Richmond, from Stockton to Semmes st. Board instructed the city engineer to prepare estimates of cost of asphalt block, bitulithic and bituminous macadam paving.

Parkersburg, W. Va.—At special election voters of Parkersburg adopted bond issue of $200,000 for street paving and sewer investments with so-called Skanton law.

Colville, Wash.—Preliminary surveys are being made for trunk sewer which city council is planning to build this season.

De Pere, Wis.—Macadamizing of South Broadway is under consideration.

Itasca, Wis.—City commission contemplates widening city road to city limits of Itasca.

Sparta, Wis.—City council of Sparta has decided to pave about twenty blocks of city streets this season. Brick and macadam will be used.

CONTRACTS AWARDED.

Opelika, Ala.—To Montgomery Constr. Co., of Montgomery, contract for 10,000 sq. yds. Dolarway pavement.

Augusta, Ark.—By Woodruff County Commissioners, contract to Joe Cole, of Little Rock, Ark., to construct 30 miles of road in District No. 1. E. A. Kingsley is engineer, 717 Southern Trust Building, Little Rock.

Paragould, Ark.—By Commissioners Street Paving District No. 1, contract to Pouncey Paving Co., of Memphis, Tenn., at about $90,000, to pave about 41,000 sq. yds. streets. E. A. Kingsley is engineer, 717 Southern Trust Building, Little Rock.

Harvard, Ill.—For paving of East Brainard, Church and Garfield sts. by Bd. of Local Improv. to McCugh-Bullock Co. of Waukegan at $8,186.

Joliet, Ill.—By Bd. of Local Improv. contract for paving Eastern ave. with asphalt to H. P. Streicher Co., of Memphis, Tenn., for $12,300.

Monmouth, Ill.—By board of local improvement, contract for 4 blocks of paving on South Main st., to Burlington Construction Co., of Monmouth, for $11,539.

Peoria, Ill.—To A. D. Thompson Contracting Co., of Peoria, contract by board of local improvements, for paving of Thrush avenue, from Knoxville to Wisconsin avenues, for $21,694. Contract provides for 30-ft. brick paving between curbs.

Angola, Ind.—By city contract for 7,930 sq. yds. metropolitan brick, to Brooks Construction Co., of Fort Wayne.

Indianapolis, Ind.—With approval of board of public works, Frank Lawson has transferred to Lackey Brothers contract for paving Wallace st., from Washington to New York st., with brick.

Indianapolis, Ind.—Contracts for paving streets with asphalt have been let by board of public works as follows: Linwood ave., from New York to Michigan st., to the Union Asphalt Construction Co., $4,995.54; 19th st., from Illinois st. to Capitol ave., to American Construction Co., $4,199.07; 21st st., from Talbott to Central aves., to American Construction Co., $6,054.54.

Muncie, Ind.—By commissioners of Delaware county to John W. Lambert contract for constructing three country roads in Delaware county for sum of $15,900.

Muncie, Ind.—By board of public works, for paving of East Washington street, from Mulberry to Pennsylvania tracks, to the Western Construction Co., of Lafayette, Ind., for $45,894.

Portland, Ind.—For improvement of Bickel highway on Jay and Darke county line, to Luttman & Fennig, of New Corydon, at $18,299.

South Bend, Ind.—Contract for paving of College st. has been awarded to Hoban & Roach by board of public works. Pavement will be brick laid upon gravel foundation.

Waterloo, Ia.—For improving Lafayette and E. 4th sts., requiring approximately 12,790 sq. yds. asphalt pavement, 4,660 sq. yds. brick pavement, 5,260 lin. ft. combined curb and gutter, and 100 lin. ft. plain curb to Bryant Asphalt Co., at $2.24 per sq. yd.

McPherson, Kan.—For grading, curbing and paving East Euclid st., to J. R. Ramsey, of Topeka, for about $35,000.

Biddeford, Me.—For street sprinkling, to Horatio Emmons, South street, at $1,200.

Baltimore, Md.—By Board of Awards for paving as follows: To Schneider Paving Co., contract 108 at $25,133; contract 109, $6,542; 110, $12,896, and contract 111, $13,367; and to P. F. Flanigan & Sons, for contract 107, $11,694.

Denton, Md.—By county commissioners at Denton, for constructing section of state-aid highway between Denton and Willow Pond, distance of about 1.63 miles, including construction of bascule drawbridge, to Holt Construction Co., of Fredericksburg, Md., for road and concrete portion of bridge at $33,236. Bids for the bascule draw were in excess of State's estimate and were rejected; new bids will be asked.

Rockville, Md.—By County Comrs. to Forsyth & Smith, of Belair, contract for construction of pike from Conasset, along river road to the District of Columbia line, distance of about 3 miles, for $24,806.

Boston, Mass. — By Massachusetts Highway Comn. for state highway work as follows: Amherst road, 4,200 ft., to Lane Constr. Co., of Meriden, Conn., $8,275; Seekonk road, to T. J. Quinn & Co., of Ashton, $7,900.

Charlotte, Mich.—To Horton H. Bryan of Brookfield, contracts for building one mile on Brookfield township and one mile in Walton township. His bid was $1,780 on Brookfield road and $2,170 for Walton road. Ernest Stevens of Eaton Rapids has been awarded contracts for building one-half mile in Carmel township for $1,165 and one-half mile in Hamlin township for $1,100.

Houghton, Mich.—To Hall & Labby of Calumet, for construction of two and one-half miles of road from north end of Mesnard section to south end of Rhode Island section, by Houghton county road commission. Contract calls for the construction of a 15-foot bituminous brown macadam road.

Oxford, Miss.—Lafayette county road commissioners have received bids for construction of 40 miles of roadway, completing road system for Beat No. 1. Seven bids were received and contract awarded to Gordon & Phillips, for the road work, grading and concrete construction.

Austin, Minn.—By city recorder, for approximately 15,000 sq. yds. of paving and 7,000 lin. ft. cement curb, to Fielding & Shepley, of St. Paul, at $33,196 for 14,820 sq. yds., and $2,626 for creosote block with 6,974 lin. ft. cement curb.

Hibbing, Minn.—Contract for paving approximately twenty blocks at estimated cost of about $150,000 has been awarded by council to Coons & Butler of Hibbing. Their bid is 55 cts. for excavating; $2.33 per yard for creosoted blocks 3 ins. thick and $2.43 per yard for bitulithic. Fourth ave. and intersecting streets east will be paved with bitulithic, total of about 15,000 yds., while balance of district to be improved, total of about 22,000 yds., will be paved with creosoted blocks.

Stanford, Mont.—For 104,000 sq. ft. of walks, 3,500 ft. curb and 8,000 sq. ft. of street crossings, to J. C. McGuire, of Salt Lake City, for $20,565. The three other lowest bids were: Two Miracle Co., Great Falls, $21,924; Miracle Tripp, Helena, $22,130, and Nelson Smith, Great Falls, $23,858. Gerharz-Jaqueth Engineering Co., Billings, are the engineers.

Belvidere, N. J.—The Warren county freeholders awarded contract for 4½ mile road conecting Blairstown with Hainesburg to Salman Bros., of Morristown, N. J. Contract will be submitted to state road commissioner for his approval. Salmon Bros. offered two bids, one for $49,278.08 for gravel road, and another for $54,753.43 for rock road. Latter material was chosen. Other bidders were Miller Engineering & Contracting Co., of Philadelphia, who bid $46,625.06 for gravel road and $49,994.50 for rock road, and J. T. Harrop & Co., of Garfield, for $56,804.80 for rock road.

Hackettstown, N. J.—By common council, to J. Boyd Hadley of Morristown, applying oil to streets at 1¾c. per sq. yd. Oil to be used is non-asphaltic preparation.

Newark, N. J.—Tentative award to Standard Oil Co. contract for furnishing and applying oil to county roads for period of one year, beginning June 4 next, has been made by roads and assessments committee of board of freeholders.

Trenton, N. J.—Contract for paving Bellevue ave. and North Montgomery st. will probably be awarded to Russell Klocker, of Trenton, at bid of $1.54 for Foster-Dunn wire-cut-lug block.

Trenton, N. J.—Following re-paving contracts have been awarded: East State street, from the canal to Clinton avenue, with Bermudez asphalt, one-year guarantee, to Newton Paving Co., at $1.35 per sq. yd. Pavement is to be laid on present base at total cost of $2,632.30. Repairing of sections of Pennington avenue, from North Warren street to Frazier, with Pennsylvania fire clay brick, went to Charles A. Reid & Co., at $1.98 per sq. yd. Repairs are to be made on present base and total cost will be $1,980. West State street, from Willow to Calhoun, with Saxon block, to the Ginder Construction Co., at $1.58 per sq. yd. Total cost, $7,347. City Engineer Swan recommended that West State street pavement contract be awarded to Reid Co. at $1.60 per sq. yd. for Jamestown block, as Ginder Co. had failed to sign or swear to its proposal. City Solicitor Bird, however, held that irregularity was not fatal, so contract went to Ginder Co. Contract for repaving of west side of South Broad street, from Greenwood avenue to the canal, with vitrified brick, was not awarded, as supplies had not been tested. Mr. Swan recommended that contract be let to Charles A. Reid & Co., who bid $1.63 per sq. yd. on Porter national block. Mr. Swan said that three lower bids than the Reid & Co. were submitted, but these were for shale block, material not called for and not suitable for pavement. The pavement is to cost $4,489.55.

Elmira, N. Y.—By city, for paving Baldwin, East 5th and other streets, in all about 16,500 sq. yds., with vitrified block, to A. D. Osborn, O'Neil Bldg., Binghamton, for $46,000, using Corning block. His bid in detail is as follows: 7,034 lin. ft. straight Medina in concrete, 78 cts.; 553 lin. ft. curved Medina in concrete, 98 cts.; 709 lin. ft. Medina headers in concrete, 75 cts.; 18,026 sq. yds. vitrified block on 6-in. concrete, $1.96.

Newburgh, N. Y.—To Schunnemunk Construction Co., contract to resurface and pave streets in Chester from Erie station to Academy ave.

Oneida, N. Y.—By board of public works, for sprinkling streets, to James Maloney, at 70c. per running ft. for paved streets west of Main street and to John Pardee at $1 per running ft. for balance of paved streets and dirt streets as well.

Rochester, N. Y.—By board of contract and supply, contract for Portland avenue resurfacing to Whitmore, Rauber & Vicinus of Rochester, for $32,723.

Elyria, O.—By Comrs. of Road Dist. No. 1 for furnishing material and constructing roads in Elyria, Carlisle Township, and Ridgeville Township, 3.97 miles, to Hart & Kemp, of Elyria, at $29,044.

Girard, O.—By village council for Liberty and Broadway paving contracts to Turner & Olson, of Youngstown. Estimated cost of the improvement ran close to $40,000.

Girard, O.—By village council to R. W. Williams at 12 cts. per sq. ft. for sidewalk work.

Toledo, O.—By board of control, for repaving of St. Clair street, to Russell & Jennison of Cincinnati, at $47,600. That part of street between Monroe and Knapp streets will be paved with wood block at cost of about $40,500, and between Knapp and Emerald asphalt pavement will be laid over present Medina stone pavement at cost of $7,100.

Sioux Falls, S. D.—By city commissioners two grading contracts as follows: First, for grading of Spring ave. and 24th st. to 26th, was given to H. C. Newell on his bid of 16½ cts. per cu. yd., while second was awarded to W. L. Baker on bid of 15¼ cts. per yd. for grading 25th st., from Phillips to Summit ave.

Union City, Tenn.—To Koehler Bros. Co., of Memphis, contract for constructing sidewalks for about $30,000.

Fort Worth, Tex.—To Texas Building Co., Fort Worth, Tex., contract by Tarrant County commissioners, for construction of cardinal and sub-cardinal roads, at $656,504. Work includes construction of eight roads from Ft. Worth to Tarrant county line—eight points of the compass.

San Antonio, Tex.—By city council, contract to grade and gravel Denver boulevard and Iowa street to W. A. Kelley, for $12,800.

Danville, Va.—By State Commission, Richmond, contract to J. J. Battershell at $88,700 to construct 37½ miles soil road and 6½ miles macadam road. P. St. J. Wilson is State Highway Commissioner.

Richmond, Va.—By administrative board, for three blocks of asphalt block paving on Porter street to Washington Asphalt Block & Tile Co. of Richmond, at $2.38 per sq. yd.

Seattle, Wash.—To W. F. Manney, of Seattle, by board of Public works of that city, for grading Division avenue, at $25,032.

Tacoma, Wash.—By board of park commissioners, contract for completion of link of pavement in Point Defiance Park to Joseph Warter, Sr., for $23,753.

Wenatchee, Wash.—Contract for paving of Wenatchee ave. to J. J. McNerney, of Wenatchee.

Monroe, Wis.—By city contract for 8,435 sq. yds. tarvia filled macadam to T. W. Quinn, of Madison, at $1.31 per sq. yd.

Superior, Wis.—By board of public works, for construction of cement sidewalks in Fifth ward to Magnus Peterson at 64.5c. per lin. ft. Other bids were: P. E. Bergman, 67.25c. per lin. ft.; Berg & Rusten, 66.5c. per lin. ft.; Ed Johnson, 71.5c. per lin. ft.

SEWERAGE

Clarendon, Ark.—City has authorized $60,000 of sewer and water works improvement bonds. John W. Hooper is secretary.

Roanoke, Ala.—City has voted $20,000 in bonds to construct sewer system; W. H. Mann is Mayor.

Los Gatos, Cal.—Town Engineer Frank A. Nikirk states that copy of plans and specifications for outfall sewer has been submitted to state board of health.

Bridgeport, Conn.—Bids have been ordered for laying of Whittier street and Frank street sewers; estimated cost from $3,000 to $4,000.

Hartford, Conn.—Street commissioners have requested board of contract and supply to advertise for bids for laying four new sections of sewers on Enfield st., Terry road, North Front st. and Bradview terrace.

Newark, Del.—Town council has approved of plans and specifications for proposed system of sewers and disposal plant as prepared by T. Chalkley Hatton, of Wilmington, engineer for sewer commission.

Washington, D. C.—Bond issue has been voted for sewerage improvements.

Eustis, Fla.—Bids will be received by town clerk of town of Eustic, Fla., until 8 p. m., of June 2, 1913, for $29,000 of negotiable coupon bonds, issued for purpose of constructing sanitary sewerage system. Percy H. Hethcox, clerk.

Americus, Ga.—Bonds in sum of $10,000 will be sold until 8 p. m., May 28, for sewerage extension. Lee Allen, chairman finance committee.

Boise City, Idaho.—Bonds in sum of $45,000 will be voted on June 3 for storm sewers.

Kellogg, Idaho.—Construction of adequate sewer system is being considered.

Great Bend, Kan.—Five bids, ranging from $18,173 to $23,065 for construction of outlet for city sewer septic tank have been rejected by council as not within the city engineer's maximum estimate of $15,000. New bids will be considered soon.

Memphis, Mo.—City will shortly vote on construction of sewer system to cost $12,000.

St. Joseph, Mo.—Bids will shortly be asked for construction of sewer in district 140 in South St. Joseph.

Boonton, N. J.—By unanimous vote Boonton common council has taken first decisive step toward building of sewer according to draft of agreement to be entered into between Jersey City and town. Mayor and clerk have been authorized to execute contract. It will cost town $107,000 if all of streets are sewered at one time.

Dover, N. J.—New sewer will be built to prevent pollution of Rockaway River, chief feeder for Jersey City water system.

Irvington, N. J.—Ordinances have been passed for construction of sewers in various streets.

Trenton, N. J.—Ordinance providing for construction of a sewer in Ashmore ave. has been passed. Also ordinance providing for construction of sewer in Mifflin st.

Trenton, N. J.—Ordinances have been passed authorizing construction of Sewers No. 579 and 507. Frank Thompson is City Clk.

Buffalo, N. Y.—Aldermanic committee on sewers has resolved after hearing interested property owners and residents in northeastern part of city to report in favor of abatement of Scajaquada creek nuisance by filling in stream and building of highway from Grider st. to Genesee, probably connecting with Schiller park. It is estimated that cost of the improvement will be between $600,000 and $700,000.

Newburgh, N. Y.—Construction of sewer in Washington st. has been recommended.

Syracuse, N. Y.—Plans for system of storm water sewers in First and Second wards are being prepared by Intercepting Sewer Board in anticipation that Governor Sulzer will sign bill authorizing board to issue $100,000 bonds for improvement.

Lowellville, O.—Construction of sanitary sewer system will shortly be considered.

Springfield, O.—Sanitary sewer in Mulberry street from Western avenue to the old Dayton road, will be recommended to council by sewer committee of that body, also sewer in Columbia street.

Youngstown, O.—Resolutions have been adopted for construction of sewers in various streets.

Meadville, Pa.—Bond issue of $60,000 has been passed for sewerage and paving improvements.

Sharon, Pa.—Special election will be held June 12 for voting on $50,000 bond issue for various sewer and street improvements.

Williamsport, Pa.—Ordinance has passed first reading providing for storm sewer in Erie avenue, from Berger street to Beeber street and in Albert place from Erie avenue to Andrews place.

Fall River, R. I.—Aldermanic committee on sewers has mapped out work requiring outlay of $60,000 at present time, and later in year will probably arrange for expenditure of at least equal amount and remainder of special loan of $250,000 will be taken up next year. Largest amount provided for any single sewer is $15,000, for trunk sewer at Steep Rock. It is estimated that it will take $50,000 to complete this sewer.

Providence, R. I. — Resolutions have been adopted for construction of various sewers.

Woonsocket, R. I.—Passage of resolution appropriating $996.64 to pay for necessary right of way for extension of Fairmount trunk sewer has been recommended.

Sioux Falls, S. D.—Board of Commissioners has adopted plans prepared by S. B. Howe, city engineer, for construction of lateral sanitary sewers in various streets. G. W. Burnside, mayor, and W. C. Leyse, city auditor.

Angleton, Tex.—Construction of sewer system and water works is contemplated. Guy Huffman is City Clerk.

Bonham, Tex.—Sewerage system mains will be extended.

Appalachia, Va.—City has voted $21,000 bonds for construction of sewer system. Bids will probably be invited.

Parkersburg, W. Va.—Bond issue of $200,000 has been voted for sewer and street improvements.

CONTRACTS AWARDED.

Pomona, Cal.—Louis Ferrill of Pomona has been awarded contract for construction of four miles of drainage ditch, 15 ft. wide and 6 ft. deep, for Pioneer Drainage district south of Chino at 18c. cu. yd. excavation and $500 for grubbing and clearing. E. H. Sleeper is engineer. After completion of drainage canal property owners will individually install system of 8-in. drains on their properties.

Orlando, Fla.—By Sewerage Com. for constructing 26½ miles of sanitary sewer and 3,000 ft. storm sewer as follows: Sewers to F. D. Harvey & Co., Memphis, Tenn., $78,000; septic tanks to Hamilton Johnson, Jackson, Miss., $22,500, and wells to Ohio Well Driling Co., Jacksonville, $3,500. G. R. Ramsey is city engineer; consulting engineer is Geo. W. Fuller, of New York City.

Atlanta, Ga.—By Sewer Com. contracts for constructing 5 groups of sewers as follows: To F. D. Harvey, Group 1 at $14,454, and Group 4, $9,717; to Dysard Constr. Co., Austell Bldg., Group 2, $16,267, Group 3, $14,666, and Group 5, $8,667.

Pontiac, Ill.—By board of local improvement for Driving Park sewer to John Cherry, of Jacksonville, Ill., for $28,757.

Fulton, Ill.—By board of local improvement contract for about 25,000 lin. ft. 8 to 20-in. vitrified pipe sewer to Jas. Kelly, of Morrison, for $28,298.

Indianapolis, Ind.—Board of public works has let contract to George W. Fife to repair break in Fall creek interceptor where it crosses Fall creek at Senate ave. Work is to be done on basis of cost, plus 15 per cent. profit, with allowance of $10 a day for rent of machinery.

South Bend, Ind.—Board of public works has adopted resolutions for pipe sewer on Eddy, Perry and Franklin streets, for grade and curb on Portage avenue, for pipe sewer on Portage and for condemnation of property on Portage for purpose of widening streets. Bonds and contracts for brick pavement on Howard St. and for same on Pine and Ottawa streets have been approved by board. C. H. Defrees is contractor for all three jobs.

Burlington, Ia.—To Little Construction Co., Sioux City, Ia., contract by city for construction of sewer in Garfield avenue, with branches, for $1.35 per lin. ft.

Burlington, Ia.—To Brogan & Pitz, contract by city for construction of vitrified pipe sewer in Harrison avenue, at $1.37 per lin. ft.

Louisville, Ky.—Board of public works has opened bids on construction of 47 blocks of interior sewers on Main, Market, Jefferson, Green and Walnut streets, in territory bounded by Baxter avenue and Twenty-sixth street. The L. R. Figg Co. of Louisville will probably be the successful bidders.

Baltimore, Md.—By sewerage commission, for storm water contract No. 27 to Ryan & Reilly at $29,025.05.

New Bedford, Mass.—To Cambria Steel Co., for steel reinforcing rods for construction of section 4, intercepting sewer in Second st., at $3,685. Other bids as follows: Buffalo Steel Co., $3,717; Franklin Steel Works, $3,738; Trussed Concrete Steel Co., $3,990; James W. Sederquist, $4,263; Terrill & Rogers, $4,599.

Hermann, Mo.—To Tonkawa Construction Co., Tonkawa, Okla., contract at Hermann, for construction of 4½ miles of sewer laterals, for $11,218. Burns & McDonnell, Scarritt Bldg., Kansas City, Mo., are Engineers.

Poplar Bluff, Mo.—Py city contract to Bell-Hudson Construction Co., of Poplar Bluff, at $16,692, to construct sanitary sewer system in Sewer District No. 3; work includes 20,187 ft. 6-in. pipe, average cut 6.4 ft.; 1,796 ft. 8-in. pipe, average cut 6.4 ft.; 923 ft. 10-in. pipe, average cut 7½ ft.; 3,424 ft. 15-in. pipe, average cut 7 ft.; 1,440 ft. 24-in. pipe, average cut 8.3 ft.; 51 manholes; Edward C. Thomas is City Engineer.

Springfield, Mo.—By city contract for 6 miles of 8 and 10-in. pipe sewer to Plummer-Adams Co., U. N. Bank Bldg.

Perth Amboy, N. J.—By council, for laying sewer and water house connections in Cortlandt street, Oak street and Mechanic street, to Carl F. Poulson, at rate of 49c. per lin. ft. for 6-in. clay pipe, and $11.50 each for ⅝-in. taps with 1-in. galvanized iron pipe, being lowest bidder.

Brooklyn, N. Y.—Bid of William Crovello, at $23,550, for building sewer in Redfern ave., Far Rockaway, has been rejected and new bids will be advertised.

Newburgh, N. Y.—For construction of trunk sewer in Fullerton avenue from Third street to Gidney avenue, to Kellan & Shaffee Co. of Schenectady. Following are bids received; Jova & Kehoe, Inc., of Newburgh, who offered to furnish 30-in. sewer pipe at $7.37 per lin. ft.; 20-in. pipe at $1.95 per lin. ft.; to do rock excavation at $4 per cu. yd.; to construct manholes at $100 each, and to leave timber sheathing in the trench at $50 per M ft. Second bidder was Michael R. Spino, also of Newburgh, who offered to furnish 30-in. pipe at $7.05 per lin. ft.; 20-in. pipe at $2.15 per lin. ft.; to do rock excavation at $4 per cu. yd.; to construct manholes at $85 each, and to leave the timber sheathing in trench at $50 per M ft. Kellan & Shaffer Co. of Schenectady: 30-in. pipe, $6.75 per lin. ft.; 20-in. pipe, $1.80 per lin. ft.; to do rock excavation 20c. per cu. yd.; to construct manholes at $74 each, and to leave timber sheathing in trench at $45 per M ft.

Vinita, Okla.—For 7,700 lin. ft. 15-in. vitrified pipe sewer, and a concrete disposal tank, to S. W. Weathers, of Muskogee, at total of $12,209.

Carlton, Ore.—For construction of sewer system to Dennis & Christenson, of Portland, at $14,878.

Chester, Pa.—Contract for Penn st. sewer and storm sewer on Central ave. has been awarded to John Hanna & Sons, lowest bidder, at following bid: Penn st. sewer, 8-inch terra cotta pipe, $1 per foot; "Y" branches, 50 cts. each; manholes, $35 each; rock per cu. yd., $4.75; brick storm sewer, $5.66 per foot; manholes, $35 each; rock per cu. yd., $3. E. H. Oliver secured contract for Thurlow st. sewer, his bid being lowest, at the following figures: 8-inch terra cotta pipe, 87 cts. per foot; "Y" branches, 50 cts. each; manholes, $35 each; rock per cu. yd., $3.90.

Oil City, Pa.—To Lesher, Roess & Lesher, of Oil City, contract for constructing Imperial tract sewers, for $6,941.

West Chester, Pa.—By Council, to Farrell Brothers, for $13,350, construction of new intake sewer system.

Williamsport, Pa.—For construction of Erie avenue house sewer to Charles Dugan at $1,779.50.

Sioux Falls, S. D.—For construction of lateral sewer on Fifth avenue from 14th street to 13th street, to Fanebust Bros., at $597, also sewer on Second avenue from 26th street to 21st street, at $751. For sewer on 23d street, contract was awarded to W. L. Baker at $75 and one on First avenue at $245.

Clintonville, Wis.—To Mulholland, Kuehn & Co., of Kaukauna, contract for constructing sewers, at $8,000.

Edmonton, Alta, Can.—To H. C. Ulen, 38 S. Dearborn street, Chicago, Ill., contract at Edmonton, Alta., for sewer construction amounting to $372,000.

WATER SUPPLY

Roanoke, Ala.—City has voted $20,000 in bonds to rebuild and enlarge water and electric light plants. W. H. Mann is Mayor.

Lodi, Cal.—City trustees have authorized another well to add to water supply of city.

Sacramento, Cal.—Commissioner Wilder has introduced resolution in City Commission providing for adoption of specifications for extension of water main from Thirtieth and Q sts. to Libby, McNeil & Libby plant, at Thirty-first and R sts., which is approaching completion. Resolution has also been adopted providing for immediate advertising for bids and letting of contract. Both resolutions have been carried.

Davis, Colo.—T. G. Schmeizer has been granted franchise to lay water pipes through city streets.

Indianapolis, Ind.—Board of public works has ordered Indianapolis Water Co. to lay approximately 21,000 ft. of water mains, making total of 32,000 ft. of mains ordered since January 1.

Indianapolis, Ind.—Indianapolis Water Co. has been ordered by board of public works to lay water mains in 21st st., from Talbott ave. to New Jersey st.; in Division st., from Ray st. to River ave., and in North Audubon road, around the northeast segment of Audubon circle.

Richmond, Ind.—Extensions of water mains of city, involving estimated expenditure of nearly $5,500, have been asked of Richmond City Water Works Co. by board of works.

Franklin, Mass.—Town meeting will be held for discussing following articles: Whether town will extend water main on Brook st. to Lincoln st., and whether town will petition Legislature to issue bonds not exceeding $50,000 to extend water system.

New Bedford, Mass.—Petitions have been received for extensions of main water pipes.

Libby, Mont.—The Libby Water Works, Electric Light and Power Co., owning Libby water and lighting systems, will expend about $7,000 during summer on improvements.

Woodbury, N. J.—The Woodbury City Solicitor has been instructed to draw ordinance providing for issuance of bonds for building artesian water plant.

Canastota, N. Y.—By vote of 37 to 6, proposition to raise $3,500 by taxation, to extend mains and make taps in connection with two big paving propositions that confront the village, has been carried.

Mt. Morris, N. Y.—Sum of $140,000 in bonds have been voted for municipal waterworks system.

Schenectady, N. Y.—Plans are being considered for improvements to waterworks system. C. A. Mullen is Commissioner of Public Works.

Salisbury, N. C.—Bond issue of $50,000 for water and lights has been carried.

Washington, N. C.—At municipal election held in this city citizens voted on bond issue of $15,000 for public improvements, same to be used for municipal water works and sewerages and improvement to municipal electric plant.

Lowellville, O.—Water works system will be installed.

Youngstown, O.—Erection of standpipe in East Side has been authorized.

McKeesport, Pa.—Ordinance has been passed increasing indebtedness of city to not more than $14,000 for laying of water mains.

Sharon, Pa.—Ordinance for increasing bonded indebtedness of Farrell $125 000 for purpose of building municipal water plant is ready and will shortly be presented to council.

Millville, R. I.—Plans are being perfected for installation of water plant.

Angleton, Tex.—Construction of water works and sewer system is contemplated. Guy Hoffman is City Clerk.

Benham, Tex.—Additional waterworks mains have been ordered in various parts of city.

Marlin, Tex.—City will shortly spend $25,000 for improvements to water works system.

Harrisonburg, Va.—Harrisonburg is to have a new reservoir which will hold 5,000,000 gallons of water.

Richmond, Va.—Judge Daniel Grinnan has filed with Administration Board plans for water system in Laburnum tract, under authority of ordinance of City Council, approved April 11.

CONTRACTS AWARDED.

Fullerton, Cal.—To Frank Benchley contract from Bd. of City Trus. for construction of reservoir to cost $12,900.

Melrose Park, Ill.—By Village Trus. to W. T. McCaskey & Co., of Lansing, contract for municipal electrical driven water pumping plant to include air lift system, 3 horizontal single stage turbine pumps and motors, switchboards, etc., for $12,999. Engineer is C. C. McLain, Acoville Bldg., Oak Park, Ill.

Riverside, Ill.—By village for steel tower and balcony and ornamental iron work for water tower, to Chicago Bridge & Iron Works, at $10,140; for building and extension to masonry of water tower to George Hinchliff Co. at $12,585; for centrifugal pumping machinery to American Well Works, at $1,950; for piping work, to Jas. W. Castle, at $2,735, and for electrical work, switchboard and wiring, to Riverside Electric Co., at $1,941. D. H. Maury is consulting engineer and D. A. Graham, principal assistant engineer.

Decatur, Ind.—For construction of 230,000-gallon reservoir to be built at city water works plant to W. O. Newlin Co.

Mishawaka, Ind.—By city to John Distler for laying East Second street water connections at 64c. per lin. ft.

Cedar Falls, Ia.—Contract for new steel water tank has been awarded to Des Moines Bridge Co., whose bid of $3,900 was lowest of three, who submitted bids. The Black Hawk Construction Co. and Chicago Bridge & Iron Co., were other two.

Bangor, Me.—Citizens of Brewer have voted to instruct city council to make contract with Brewer Water Co., of which Governor Haines is leading promoter, for supply of water for all purposes. Contract is to run 20 years, and city is to have water free for all public buildings, including city hall and schools and three fountains.

Buhl, Minn.—By Village to Northern Electric Co., of Minneapolis, for furnishing all apparatus required for water, light and pumping plant.

St. Louis, Mo.—For water works material, contracts have been awarded as follows: For 3,030 tons of 3, 4, 6, 12, 20 and 30-in. cast iron coated water pipe, to the American Cast Iron Pipe & Foundry Co., Birmingham, Ala., at $74,462.50; 240 tons cast iron coated special castings, Bessemer Foundry & Machine Co., Bessemer, Ala., $10,632; 296 3, 4, 6, 12, 20 and 36-in. stop valves and 20 6-in. special tapping valves, A. P. Smith Mfg. Co., East Orange, N. J., $4,960; 175 post fire plugs and 500 post fire plug top parts, American Foundry & Machine Co., St. Louis, Mo., $15,975.

Claremont, N. H.—By town, contract for new work and repairs on water system to Osgood Construction Co., of Nashua, N. H., for $39,970.

Oswego, N. Y.—Mexico Water Commission has awarded contracts for construction of proposed new water supply system to be built in that village. The work is divided into six contracts. The Public Engineering & Construction Co. of Buffalo were successful bidders for construction work. The other contracts were awarded as follows: Rumsey Pump Co., Seneca Falls, pumping machinery and motor; American Water Softener Co., Philadelphia, Pa., filters; Demoines Bridge & Iron Co., Pittsburgh, Pa., stand pipe; Millar Sons & Co., Utica, supply pipe; R. D. Wood & Co., Pittsburgh, Pa., hydrants and valves.

Utica, N. Y.—Consolidated Water Co. of this city has announced awarding of its new six-mile pipe line contract from Marcy Summit to intersection of Champlin avenue and Whitesboro street, to Horace K. Corbin of Elizabeth, N. J. Contract also includes construction of equalizing reservoir on the William Watson farm in Marcy.

South Bethlehem, Pa.—By council, to Weaver Construction Co., Allentown, for extension of water mains to west side at $6 643.36. Itemized bid as follows: earth excavation, per cu. yd., 60c.; rock excavation in street, per cu. yd., $2; rock excavation in creek, per cu. yd., $4; lumber in trench per thousand, $45; street valve boxes, $4 each extra.

Huron, S. D.—State Bd. of Agriculture for 3,654 ft. 4-in. water main and contracts have been awarded as follows: To the U. S. Cast Iron Pipe & Foundation Co., for pipe; Albert M. Anderson, Huron, S. D., for labor; Western Valve Co., Chicago, hydrants; Geo. R. McBride, Huron, pig lead and hemp.

Corpus Christi, Tex.—To San Antonio Machine & Supply Co., contract for supplying city with machinery for relay pumping station which will be located about five miles west of city.

Norfolk, Va.—By board of control, contract to Berkley Foundry & Structural Co., to supply water department with iron castings and supplies up to January 1, next, to include 300 small meter boxes and covers at $1.45 each; 25 large meter boxes and covers at $3.10 each, and 50 extra covers for small meters boxes at 23 cts. each.

Regina, Sask.—By city commissioners for supply and delivery f. o. b. cars Regina, for water works material, as follows: To Cast Iron Corporation, for cast-iron pipe, for $253,426; lead pipe, galvanized pipe, block pipe and jute rope, to the Jas. Robertson Co., of Winnipeg, Man., for $15,435; pig lead, to J. H. Ashdown, for $11,800; to Drummond, McCall & Co., Toronto, for valves, hydrants, etc., at $19,260; to Bissett & Louchs, for brass gate valves, $375; brass goods, to the Metals Ltd., of Calgary, at $10,702.

LIGHTING AND POWER

Roanoke, Ala.—City has voted $20,000 bond issue for rebuilding electric-light and water plants; W. H. Mann is Mayor.

Pasadena, Cal.—City Council has authorized installation of new equipment for municipal electric light plant, including two water-tube boilers and automatic motor-operated induction feeder, 23,000 volts, 3-phase, 50 cycles.

South Pasadena, Cal.—City Clerk has been directed to advertise gas franchise. This is to be done in compliance of request from Los Angeles Gas & Electric Co.

Wilmington, Del.—Levy Court has granted to People's Light, Heat and Power Co. blanket franchise to supply current to all towns and villages within county outside of Wilmington.

Des Moines, Ia.—Plans for lighting viaduct and market house are being discussed.

Abilene, Kan.—By vote of 588 to 50 franchise was given at special election to Manhattan Gas Co. to install artificial gas plant.

Leavenworth, Kan.—Plans are being considered for installation of great white way on Delaware st. from Main to Broadway.

Ocean City, Md.—Henry T. Moore, of Wilmington, Del., president of Delmarvia Utilities Co., has asked Public Service Commission, of Maryland, to grant permission for his company to begin installing electric lighting system for Ocean City, Md.

Bay City, Mich.—Plans are being made for installation of "white way." Estimated cost, $20,000.

Albany, Mo.—At special election voters of Albany have authorized issuance of $19,000 in bonds for purpose of remodeling electric light plant and making extensions.

Nashua, N. H.—City has been authorized to sign with Nashua Light, Heat & Power Co. a contract for five years.

Mt. Morris, N. Y.—Franchise has been granted the New York Central Gas Co. to lay pipes in town.

Newburgh, N. Y.—Petition will come before City Council signed by property owners along Front st. from Erie Railroad station to South st., asking that ornamental light poles be introduced along that thoroughfare similar to those in Second Broadway, Colden, Water and Second sts.

Niagara Falls, N. Y.—Bill empowering Board of Public Works to apportion half cost of decorative lighting system has been passed by Legislature.

North Merrick, L. I., N. Y.—Establishment of electrical lighting district is being discussed.

Salisbury, N. C.—Bond issue of $50,000 for lighting and water system has been carried.

Washington, N. C.—Bond issue has been voted for improvements to municipal electric plant.

Franklin, Pa.—Boulevard lighting system is to be extended.

Johnstown, Pa.—Water and lights committee has decided to recommend to council adoption of ordinance granting Citizens' Light, Heat & Power Co. permission to place ornamental lightposts on sidewalks in front of central city business houses.

Williamsport, Pa.—Subject of lighting streets with gas is being discussed.

Orangeburg, S. C.—City has voted $60,000 bonds for improving water and light plants.

Navasota, Tex.—Franchise has been granted the Navasota Light & Power Co. to furnish electric light and power.

Norfolk, Va.—Extension of "white way" on Granby st. is being discussed.

CONTRACTS AWARDED.

Elizabethtown, Ky.—Elizabethtown City Council has closed contract with Kentucky Utilities Co., which recently purchased light plant here, to pump city water from power-house for $149.76 per month, beginning July 1, and continuing six months. City is to install a pump at cost of $1,110.

Napoleonville, La.—By city, contract to Anderson Offut, electrical engineer, New Orleans, La., for electric light plant.

Baltimore, Md.—With approval of board of awards, Superintendent McCuen has awarded contract for street illuminations during conventions of Advertising Clubs and Eagles, to Eugene I Rosenfeld, Inc. Price quoted was $1 300.

Erie, Pa.—By council, to A. P. Michaels of Cleveland, for conduit work at $1,850.

Harrisburg, Pa.—Mayor Royal has signed ornamental street lighting ordinance. Harrisburg Light & Power Co. will erect 106 ornamental lights in business districts of city.

Monterey, Tenn.—By city, franchise to George N. Welch, T. E. Goff and J. T. Price to build electric light plant; cost $3,500 to $4,000.

Mt. Pleasant, Utah.—Contract for building municipal electric light plant has been awarded by City Council to firm of Lyman & Samuels of Salt Lake City. Improvement includes power plant in Pleasant creek canyon, about four miles of transmission lines, and remodeling of present distributing system.

Calgary, Alta.—For electrical material as follows: Cross arms, to Dawson & Co., Winnipeg, Man., at $1,073, and same contractor for pins, insulators, etc., $2,565; pole line hardware, Northern Electric Co., $2,484; transformers, to Canadian General Electric Co., $9,089; meters, to Chamberlain Hookham Meter Co., $13,100, and meters also to Chapman & Walker, at $7,490; street lighting equipment to Canadian Westinghouse Co., $15,452, and series cutout mast arms to the Mainer Electric Co., $2,325.

FIRE EQUIPMENT

Prescott, Ark.—Installation of alarm system is being considered.

Sacramento, Cal.—Resolution has been passed by City Commissioners that all bids for fire alarm boxes be rejected and new bids be advertised for.

Sacramento, Cal.—About 1,000 ft. of hose will be purchased.

San Francisco, Cal.—Construction of building in Jefferson Square for fire alarm and police signal system is to be provided for in city budget for coming fiscal year.

Southport, Conn.—Plans are being made for erection of fire house on Main st.

Jacksonville, Fla.—Purchase of modern fire boat is under consideration.

Cedar Rapids, Ia.—Purchase of motor combination chemical and hose wagon has been authorized by Commissioner of Public Safety McDuff.

Des Moines, Ia.—Motorization of Des Moines Fire Department would only cost $102,000, according to report filed by Councilman Van Liew with City Council. Councilman Van Liew recommends that motorized apparatus be installed in stations 1, 2, 3, 4, 5, 9, 11, 13 and 15. His estimate of cost of proposition is less than business men's estimate, which was $126,000.

Saco, Me.—Committee on Fire Department has been authorized to act on petition of Ferry road residents for hose reel and 500 or 600 ft. of hose, to be located near Ferry school-house. This petition will be granted and reel supplied, to be equipped with hose replaced by new hose in city.

Trenton, Mo.—Installation of electric fire-alarm system is being considered.

Holyoke, Mass.—Purchase of two motor combination chemical and hose wagons and one tractor has been recommended by Fire Commissioners.

Medford, Mass.—Three new pieces of motor fire apparatus are to be purchased by fire department at a cost of $10,500, for which city has made appropriations. South Medford, Glenwood and Central fire station will each receive one piece of new apparatus.

Cloquet, Minn.—Cloquet is to have new fire hall, resolution to that effect having been passed by City Council. City Clerk will secure plans and specifications at once. Hall will be built on site of old fire hall, on Ave. C and will be on lot adjoining new city hall.

St. Paul, Minn.—Installation of four motor fire engines and four motor hose carts is being considered by fire board.

Manchester, N. H.—Purchase of automobile for use of fire chief is being considered.

Jersey City, N. J.—Board of finance has authorized purchase of one fire apparatus each for Chemical Engine Co. No. 4 and for Truck Co. No. 7, both purchases to be under emergency resolutions.

Ocean City, N. J.—Ocean City Commissioners have awarded to Ocean City Title & Trust Co. $10,000 bond issue for fire apparatus, bid being $1,005.

Sewell, N. J.—Sewell fire company has decided to purchase lot on Union street and erect fire house.

Binghamton, N. Y.—Purchase of another motor combination chemical and hose wagon is being considered.

Lyons, N. Y.—New chemical engine may be purchased.

Oneida, N. Y.—Mayor Otto Pfaff has designated June 2 as date for special election at which taxpayers will vote on raising $51,000 by bond issue for additional fire apparatus and municipal improvements.

Washington, N. C.—Installation of motor apparatus is being considered.

Toledo, O.—Ordinance has been passed by Council authorizing $200,000 bond issue for motorizing fire department.

Pendleton, Ore.—Electric alarm system may be installed.

Indiana, Pa.—Purchase of ladder truck is recommended by Chief H. C. Christy.

Reading, Pa.—Purchase of tractor for Keystone fire company has been petitioned for.

Fall River, R. I.—Fire commissioners of Fall River have awarded contracts for 1,000 ft. of 2½-in. hose at 89c. per ft. and 1,800 ft. of same size hose at 90c. less 2 per cent.

Chattanooga, Tenn.—City will expend $18,000 in fire improvement. Motor chemical engine will be installed at cost of $10,000.

Dallas, Tex.—Erection of three new fire stations and new apparatus has been recommended by Fire Commissioner Louis Blaylock.

Beloit, Wis.—In report to city council, Fire Chief Nygren urges motorization of fire department as soon as possible.

CONTRACTS AWARDED.

Delmar, Del.—Town Councils have placed order with Eureka Hose Co. for seven hundred feet of hose for use of fire department.

Des Moines, Ia.—Thomas R. Johnson, representing American La France Fire Engine Co., has signed contract with city officials for purchase of $11,000 worth of motor apparatus.

Bay City, Mich.—Recommendation of Fire Committee that contract for 770 ft. of insulated underground fire-alarm cable be let to Safety Insulated Wire and Cable Co. at price of $227.90 per 1,000 ft. has been approved by Council.

Little Falls, N. Y.—For supplying 1,000 ft. of fire hose as follows: 500 feet awarded to Boston Woven Hose Co., at 90 cts. per ft., and 500 ft. to Eureka Fire Hose Co., at 85 cts. per ft.

BRIDGES

Pine Bluff, Ark.—Bridge across Arkansas River, near Pine Bluff, will be erected.

Northside, Cal.—Construction of concrete bridge over Arroyo at Devil's Gate is being considered.

Bloomfield, Ind.—Appropriation of $26,000 has been made at special meeting of county council of Greene county for partly repairing flood damage to bridges and public highways.

Fort Wayne, Ind.—Allen County Commissioners have decided to repair county line bridge over Cedar Creek.

Lafayette, Ind.—A new bridge that will cost $300,000 will replace present flood damaged Main street structure which connects Lafayette with West Lafayette.

Martinsville, Ind.—County council has appropriated $13,550 for repairs to bridges damaged by flood. Largest single item was for Henderson Ford bridge over White river in Green township, for which they appropriated $7,400. Next largest item was for the Cope bridge in Green township, for which $3,400 was given.

Portland, Me.—Plans for new bridge between Orrs and Baileys islands are being made and selectmen of Harpswell expect to advertise for bids within few weeks.

CONTRACTS AWARDED.

Clinton, Ark.—By Van Buren County, to Vincennes Bridge Co., of Vincennes, Ind., at $5,000, to construct bridge across South fork of Little Red River.

Fort Wayne, Ind.—The Allen county commissioners have let contracts for three bridges and abutments on several more. Biggest contract went to Rochester Bridge Co., of Rochester, Ind. This was for new bridge near New Haven, and was secured at price of $2,877. This is for the small bridge southeast of the big bridge across the Maumee river, and will span the old creek bed opened by the flood. Next largest contract went to George Jaap, whose figures on abutments to New Haven bridge were the lowest, being $2,300. Abutments will be made two feet higher than old abutments at the bridge. Two bridges are to be built across Eel river, and as they are small, the contract was let for them together. It went to the Elkhart Bridge Co. on a bid of $1,394. On bid of $120 each for eight reinforcements to abutments on small county bridges, contract was let to E. L. Gallagher, of New Haven. Total amount is $960. Contract for two more abutments at New Haven was also let to Mr. Gallagher on bid of $672. Abutment is to be built to one of Springfield township bridges, and this went to George Jaap, who bid $857. Contract for the extension of the wings on up-stream side of the Tennessee ave. bridge went to Henry Penn, of Columbia City, on bid of $777.

Biddeford, Me.—The Sanders Contracting Co., of Portland, has been awarded contract for concrete bridge across Little river in Cornish village between two parts of village.

Cornish, Me.—Sanders Contracting Co., of Portland, has been awarded contract for concrete bridge across Little River, in Cornish village, between two parts of village.

Oxford, Miss.—To J. W. Burgett of Memphis for construction of four steel bridges.

Jersey City, N. J.—For clearing channel of Hackensack and rebuilding piers of bridge on Newark Plankroad to Linde-Griffith Co. for $16,995. This award is subject to concurrence of Essex County Freeholders.

Newark, N. J.—For rebuilding fenders of center and rest piers of Hackensack River Bridge on line of new Plank road, to Linde & Griffith Co., of Newark, for $17,135.

Trenton Falls, N. Y.—To Utica Steam Engine & Boiler Works, of Utica, contract for constructing bridge at Trenton Falls, over West Canada Creek, at about $4,000.

Minerva, O.—To George Bock & Son, of Coshocton, contract to build bridge over Tuscarawas River, Warwick Township, for $25,000.

Urbana, O.—By county commissioners, to Fred Nagle, for construction of substructure of Arrowsmith bridge over Mad river at $2,124.20.

Youngstown, O.—By county commissioners, contract to L. W. Mentzer to build bridge one-half mile from Erb school house in Beaver township.

Chester, Pa.—Contract for building of retaining walls at Morton ave. bridge has been awarded to A. Wilson Oliver at his bid of $792.

Fort Worth, Tex.—By County Commissioners, contract to McKenzie-Williams Construction Co., of Webb City, Mo., for building Samuels ave. bridge at cost of $54,000.

MISCELLANEOUS

Burlingame, Cal.—Question of $25,000 bond issue for erection of city hall has been voted on and carried. Selection of site will be made later.

Sacramento, Cal.—New state redwood grove has been approved by lower house of legislature in appropriating $75,000 for purchase and management of Branscomb Redwood park in Mendocino county. Total cost of grove is to be $250,000.

Sacramento, Cal.—Levee bonds in sum of 587,000 will be sold at once.

Vidalia, Ga.—City of Vidalia has just voted $25,000 bonds for purpose of erecting city hall and improving water and light systems.

Boise City, Idaho.—Bonds in sum of $30,000 will be voted on June 3 for Sand Creek.

Springfield, Ill.—Ordinance providing for care of garbage following erection of proposed two incinerators for city will be drawn up by commissioners in near future.

Indianapolis, Ind.—Plans are being considered for beautifying Riverside park.

Indianapolis, Ind.—Bond issue of $150,000, proceeds from which are to be used toward defraying damage done by recent flood, has been sold by City Controller Harry R. Wallace.

Des Moines, Ia.—Establishment of garbage disposal plant is being planned.

Waterloo, Ia.—Erection of detention hospital for Black Hawk county has been authorized; estimated cost, $4,500.

Topeka, Kan.—New jetty will be erected on banks of Kaw near State road.

Louisville, Ky.—Ordinance providing for appropriation of $900 for purchase of street flusher has been adopted.

Boston, Mass.—City Council will appropriate $297,800 for additions to City Hospital.

Lowell, Mass.—New bids will be called for on a 4-passenger, 4-cylinder automobile fr water department.

Pontiac, Mich.—City commission is preparing to ask for bids for sale of $50,000 park bonds voted at election of April 7. Proceedings will go for purchase of park sites, selection of property being left to commission.

Duluth, Minn.—Bids are wanted by county for dredging of channel eight feet deep and twenty feet wide, in East Two rivers from Vermillion lake to Railroad station at Tower.